ON THE

IMMEDIATE TREATMENT

OF

STRICTURE OF THE URETHRA.

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STRICTURE OF THE URETHRA,

BY THE EMPLOYMENT OF THE

"STRICTURE DILATOR."

BY

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Third Edition.

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PREFACE TO THE FIRST EDITION.

The greater portion of the following remarks has already appeared in the pages of the 'Medical Times and Gazette,' but in preparing them for re-publication I have appended some observations on the relative merits of the treatment I propose as contrasted with the various operations by incision; and have also added some Cases to illustrate more fully some of the points on which I have insisted.

I have lately been able to examine the effects of forcible dilatation upon a stricture after the patient's death from another cause,—a point of much interest; and the description, with a drawing of the preparation, which was exhibited at the Pathological Society of London, will be found at the end of the book.

The fatality that attends the uninterrupted course of a serious stricture, is but too certain. All practical surgeons are acquainted with the complications and suffering resulting from a disease, which, if taken in time, *is always amenable to treatment.* If, therefore, any means can be employed, by which all serious results can be obviated, and the treatment at the same time be made so simple as to be available by the majority of surgeons, it will, perhaps, be admitted that a step has been gained in the right direction. Hitherto I have not ventured to publish my experience of the plan I adopt, simply for the reason that it is injudicious to enunciate any new method of treatment which has not been subjected to numerous and repeated trials; but having now operated upon more than one hundred cases with unvaried success, not only in private, but also in hospital practice, where every opportunity has been afforded to the profession of witnessing the treatment and its results, I now feel justified in submitting that experience to the judgment of my professional brethren, and shall endeavour to frame such clear rules for their guidance, that, in any intelligent hands the operation may be as successful as it has been in my own.

Up to the present time, this method of treatment, although adopted by some surgeons, has been mainly confined to myself, simply, I believe, from the fact that its general utility never having been published, it has not, as yet, been appreciated. Let me indulge a hope that, should I be fortunate enough to express myself so clearly as to be generally understood, the performance of the operation may become extended.

In conclusion, I would only deprecate the prejudices which exist in the minds of surgeons, against any novelty in the treatment of a common disorder, and request an unbiased perusal of the following pages.

14 Savile Row.

December, 1861.

PREFACE.

THE increasing interest in the Subject of Stricture of the Urethra and its Treatment by Rupture, together with the necessity for a Third Edition, enables me to record my further experience, to refer to the results of previous operations, to detail cases more complicated than any already published, and to allude to instances where after the operation, the retention of a catheter may be employed with advantage.

During the last seven years, I have treated some of the most formidable cases of stricture, in all classes of society, with unprecedented success; and a perusal of these cases cannot but be interesting and instructive, and will further illustrate how little pain or inconvenience attends the new method of treatment. The objections suggested against the operation are again canvassed, and I hope so thoroughly refuted, as not to require further comment; and while I consider the

dilator so perfect that it cannot be improved, I strongly protest against instruments being sold as mine, which bear no resemblance to those now in use. The apprehension that exists in the minds of some surgeons, that because the stricture is split, and no instrument is retained in the bladder, infiltration of urine must ensue, is perfectly fallacious. No single instance of such an event has occurred in any of the 670 cases that I have now operated upon, and I believe it is all but impossible. The operation continues to be eminently successful; it is available for every kind of stricture, either with or without complications, and is almost entirely devoid of danger, indeed, I have never seen a fatal case, excepting where there was false passage through the neck of the bladder, or advanced disease of the kidneys. Six hundred and seventy operations have now been performed by myself, 420 since the publication of the second edition, and with two exceptions, details of which will be given, they have all been successful. I have referred at some length to the valuable papers of Dr. McDonnell, of Dublin, and Dr. Miller, of Edinburgh, in which they have recorded the singular fact, that in two patients on whom the immediate operation had been performed, and who shortly afterwards died, one from cholera, and the other from

obstruction of the bowels, precisely the same *post-mortem* appearances were found. And I particularly desire to draw the attention of my readers to these extracts, for if it is an admitted fact, that the chief seat of stricture is in the submucoid areolar tissue, and that the mucous membrane is usually unchanged, then the most effective treatment must be that which will rupture this constricting deposit, without injuring the canal, and as this can be safely effected by the employment of the dilator, it necessarily follows that the principle of treatment I advocate, must be correct.

The few additional cases are merely recorded as examples of many similar ones, and I trust they will prove to the most sceptical, that difficulties which were previously almost insurmountable, are now in a very short time easily overcome ; indeed, so strong is my faith in the operation that I have no hesitation in affirming that surgeons *must* adopt it, since it is so simple, and has proved so devoid of danger ; I am quite aware that prejudices have to be overcome, that I do hope that for the future, those prejudices will not be allowed to interfere with the progress of an operation capable of affording in so short a time, such decided relief.

14 Savile Row.

June, 1868.

STRICTURE OF THE URETHRA.

&c., &c.

The benefits which the illustrious brothers, William and John Hunter, have conferred upon mankind can hardly be exaggerated. By introducing into Pathology the finely inductive reasoning which had previously characterised their physiological speculations, they elicited a system of enlightened principles which has thoroughly humanised every branch of the healing art. Nature, these great teachers clearly showed was the only safe instructress in pathology and in therapeutics, and a careful and patient study of her processes in health and in disease formed the only reliable basis for successful practice. Out of the school of these eminent medical philosophers issued many distinguished disciples, who, by their writings, lectures, and example, have spread a knowledge of the Hunterian system throughout these kingdoms,

and even awakened a surmise of the nature of these important truths in France and Germany. The pre-eminent abilities of Baillie, Abernethy, and Denman, gradually moulded the practice of medicine, of surgery, and of midwifery in subjection to the Hunterian principles. A careful interpretation of Nature was the rigidly enforced rule. All rash, meddlesome, and coarse methods of treatment were denounced, the *vis medicatrix* was perpetually appealed to, *arte non vi* was constantly ejaculated. The late excellent surgeon, Mr. Lynn, an eminent pupil of Hunter, used, in his eccentric way, often to say, "*Nater*, gentlemen, *Nater* cures the disease."

Without doubt, this habitual subjection of the mind to the careful contemplation of natural processes was at the bottom of the marked improvement which, of late years, has taken place in every department of our art. It is a weakness of the human mind, however, to oscillate from one extreme to the other. In medicine, from the extreme of heroic doses, and a licentious use of the lancet, the practical pendulum vibrated to homœopathic globules and a supinely expectant treatment. In midwifery, from excessive instrumentation, the accoucheur has occasionally fallen into a helpless

acquiescence in avoidable evils; and in surgery even an affected aversion to the knife has too often seduced the operator into a fatal procrastination.

The "native hue of resolution," which is no where more necessary than in the practice of surgery, has not, perhaps, in any class of affections been so injuriously "sicklied o'er," as in certain obstinate forms of stricture of the urethra. Mr. Abernethy's denunciations of all violence in catheterism as being inconsistent with the main purpose of the remedy —viz., the absorption of the material of the stricture — has had a greater effect than he probably contemplated. A timid and dilatory treatment has been the result, and in too many instances the supineness of the surgeon has permitted the case to drift to a fatal termination. It is a sad truth that "*Nater*" will not cure a chronic stricture.

My attention was early attracted to the prevailing defects in the treatment of strictures. I could not but observe the tediousness of the treatment by ordinary dilatation, occupying many months before an average instrument could be introduced into the bladder, and that even when the dilatation was accomplished, the contraction generally returned, so

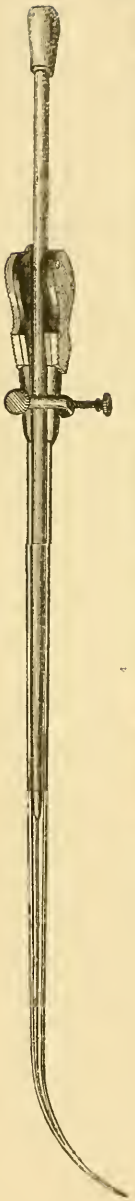

Fig. 1.

Fig. 2.

that perpetual surgical care was required.

Being deeply impressed with the unsatisfactory nature of prevailing methods of curing these distressing maladies, about twelve years ago I adopted a more energetic mode of treatment, and invited the notice of the profession to a new "Stricture Dilator." Its use was at first limited to simple dilatation, which was readily effected by graduated tubes passed between the blades without the withdrawal of the original instrument. Experience, however, soon showed me that, as a general rule, when dilatation was carried much beyond the degree produced by ordinary bougies, "stricture fever" was induced. I therefore determined, though with some apprehension as to the consequences, to *split the*

stricture by passing the largest-sized tube at once, and thus immediately to enlarge the contracted part of the canal, so that it might receive a catheter equal to the normal size of the urethra.

Fearing the effects of the urine being permitted to come in contact with the laceration thus occasioned, I kept a gum elastic catheter in the bladder, but as this measure gave rise to considerable irritation, I determined to content myself with simply splitting the stricture, drawing off the urine, and not again using the catheter till two days after the operation. After that interval, an instrument of the same diameter as that used at the time of the operation was again employed, and its use was continued—first, on alternate days, and, subsequently, at longer intervals. Experience has shown, indeed, that instances occur in which it is necessary to use a catheter one size smaller than that first passed after the operation, but such cases are exceptions.

The instrument by which this simple process is accomplished consists, as is shown in the drawing (Fig. 1) of two grooved blades fixed in a divided handle, and containing between them a wire welded to their points,

and on this wire a tube (Fig. 2) (which, when introduced between the blades corresponds to the natural calibre of the urethra) is quickly passed, and thus ruptures or splits the obstruction. The simplicity of this apparatus is obvious to all, and my experience of now above 640 cases proves that its use is unattended by any of those serious complications — viz., hæmorrhages, false passages, infiltration of urine, perinæal abscess, fistula, swelled testis, &c., &c. — which too often accompany the other operative processes devised for the relief of this malady. The forcible distention caused by the dilator affects the morbid obstruction only. The urethra in the very large majority of cases being now proved to be unaltered in its structure, *is not torn* but *simply dilated*, and the submucous deposit, the cause of the obstruction,

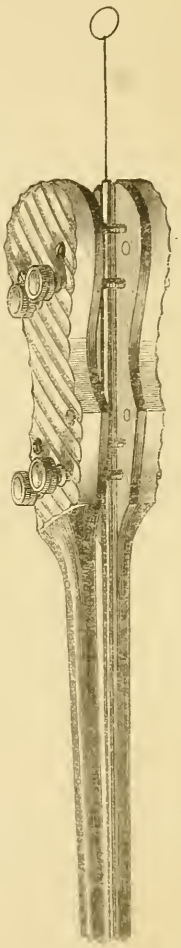

Fig. 3.

Learn of death of Wilson Jr -
see Med. Times Gazette Aug 2. 1873 -

is *alone split*, hence the trifling hæmorrhage, and the impossibility of infiltration of urine.

Since the foregoing was written, a very great improvement has been made in the construction of the instrument, in my opinion so great as to get rid of every objection that could be previously urged against it. In the former instrument, fig. 1, it was objected that there was no positive evidence that the instrument was in the bladder, and the objection was a valid one, although in the hands of an experienced surgeon, such a difficulty could hardly occur. This is now remedied by having the directing rod hollow, with an opening at the back of the curve of the dilator, so that when the stilette is removed (Fig. 3) the urine will escape in the same manner as it does when a catheter is used. But another objection was urged by some, viz., that it was possible for the tube to escape from between the blades of the dilator. This also, as a *possibility*, was true, but is now rendered quite impossible by the alteration that has been made in the handle; and as the dilator now acts as a catheter, and the tube cannot be displaced, the only objection that can possibly be urged is, as to its introduction, and for this each individual operator must be responsible.

The method of performing the operation may be described in a very few words. The permeability of the canal having been once satisfactorily ascertained, the size of the meatus of the urethra is to be gauged by passing into it a sound that will conveniently fit, if it will admit a No. 10 use a No. 10 tube, if a No. 12 a No. 12 tube. For the No. 10 tube leave the screws in (Fig. 3), arranging them so that the tube will glide freely between the blades; but if the No. 12 tube is required, remove the screws and the instrument is then set for that size. It is important to ascertain the proper measurement, so that the urethra may not be stretched beyond its natural calibre, for while the urethra of one person will admit No. 14, another will not admit more than No. 9.

A perusal of the papers by Dr. M'Donnell, of Dublin, and Dr. Miller, of Edinburgh (extracts from which will be found in the body of the book), may, however, induce further experiments with larger tubes, so as to rend the submucous deposit as much as possible, a proceeding which, if it can be effected without danger to the patient, may probably give more permanent relief than at present.

The dilator having been previously well oiled, is to be introduced with the handle somewhat

over the patient's left hip, and by keeping the convex portion gently pressing against the under part of the urethra, the point will glide along the upper portion until it is fairly beyond the triangular ligament, when, by bringing the handle to a right angle with the body, and gradually depressing it—but not so much as in the passage of an ordinary catheter—it will usually slip into the bladder; in fact, the same proceeding is to be adopted as in introducing a lithotrite for the purpose of crushing a calculus. The stilette in the perforated guiding rod is now to be withdrawn when the urine will flow, and being thus assured that the instrument is in the bladder, the Surgeon is next to place the point of the tube he has previously selected upon the wire between the blades, and thrust it *as quickly as possible* onwards to the end. By this means the stricture will be fairly split, and not dilated, the former effect being absolutely necessary to obtain the best results. The dilator should now be rotated to separate still further the sides of the rent, and then be withdrawn; a catheter corresponding to the number of the tube being substituted, for the purpose of removing the urine. The catheter is then to be taken out, and the patient sent

to bed, with directions to take, every four hours, for the first day and night, a mixture containing in each dose two grains of quinine and ten minims of the tincture of opium.

One caution is necessary to ensure the escape of the urine through the dilator, viz., that it should not be thrust so far into the bladder as to bring the opening in its curve against the posterior wall, since it would thereby be closed, and the passage of the urine would be prevented. Should this occur, let the dilator be partly withdrawn and the water will flow.

The facility with which this proceeding can be effected will of course depend upon the kind and number of the strictures, and the existence or otherwise of false passages, or fistulæ in perinæo. The urine having been withdrawn, the patient does not require to pass water for some hours, and when compelled to do so, the stream is usually larger, and the urine passes with greater facility than before. On the second day from the operation, the same catheter should be gently introduced: but, if the patient complains of much scalding, it will be better to take one size less. This should be repeated every other day for a week, when the larger one may be substituted, and

the patient be taught to pass his own instrument. Of course the time occupied in the after-treatment must vary with the nature of the case, and the more obstinate forms necessitate the employment of the bougie for some time, the intervals being gradually increased until it is not required to be used more than once in three, four, or six months, and in most instances, not more frequently than once a year. The bowels should be relieved by a dose of castor-oil taken early on the morning of the operation, and the patient should be directed not to pass water for two or three hours previously, in order—first, to facilitate the introduction of the dilator; and, secondly, to permit its free movement in the bladder.

A perusal of the following cases, which are extracted, as salient examples, from a long series, and which were, for the most part, witnessed through their whole career by the students of the Westminster Hospital, and by those Surgeons who favour that institution by their attendance, will, I think, corroborate the points which I wish to establish, and, I hope, justify me in upholding as proved the following conclusions:—

1. That the operation is of the most simple kind, and that anyone who can pass a bougie

through a difficult stricture is competent to perform it.

2. That it is not attended with hæmorrhage, infiltration of urine, abscess, or any serious local mischief.

3. That in the majority of instances the relief is immediate.

4. That the occurrence of rigors, or any other constitutional disturbance, is very rare, and the patient is seldom confined to bed longer than from twelve to twenty-four hours.

5. That the urethra is immediately made permeable by a catheter of full size, which may be ever afterwards passed at discretion.

6. That this method is available in every kind of stricture where a canula of any size can reach the bladder.

7. That when the after-treatment is judicious and attentive, the full capacity of the passage is always maintained.

8. That in all cases of neglected after-treatment, the stricture yields again to this method more promptly than to any other.

9. That, it being impossible that any but the diseased tissue can be divided, the splitting of the stricture has a decided superiority over any cutting operation.

10. And, to sum up the great advantages

in one proposition,—that the process is facile, speedy, prompt in its effects, and free from every danger, immediate or remote.

The course of general treatment will naturally vary, according to the kind of obstruction, the number of strictures, and the occasional complications of contracted bladder, enlarged prostate, fistulæ in perinæo, false passage, &c. In simple strictures, however narrow, the relief will be immediate, but in the more complex forms of these maladies, the size of the stream is not increased so directly as might have been anticipated from the immediate enlargement of the canal. Notwithstanding, however, that the size of the stream may for a short time remain somewhat restricted, the patient is able to empty his bladder much more quickly and effectually than before, and has less frequent micturition. The limitation of the jet evidently depends upon the temporary inflammation and swelling of the mucous lining; these morbid states speedily subside, and in a short space of time the patient can void his water in a normal manner.

CASES OF STRICTURE.

Case I.

Stricture of Twenty-five Years' Duration—Severe Constitutional Disturbance — Recurrence of "Stricture Fever" after each attempt to introduce a Catheter—Retention of Urine—Hæmorrhage—False Passage—Operation—Recovery.

Thomas W., aged 50, a labourer, of dissolute habits, was admitted into the Westminster Hospital under my care, on November 5, 1857. He had been the subject of stricture for twenty-five years, during which period the stream has been gradually contracting, and the urine is now passed *guttatim*. Five years since he was an in-patient at St. Thomas's Hospital, where, after considerable difficulty, a No. 1 catheter was introduced and retained, being replaced by others, in succession, until No. 6 could be passed, when he left. The contraction speedily recurred, and he was admitted into the Westminster Hospital as above. He is now greatly emaciated, with brown and dry tongue; pulse 110; countenance pallid;

appetite defective; abdomen tympanitic; nights restless; and there is a constant escape of fæces during the straining to evacuate the bladder, an effort which he is compelled to repeat every hour and a half. The house-surgeon having twice failed in passing a No. 1 catheter, each attempt being followed by syncope and subsequent rigors. I now saw the patient, and directed the nightly use of the warm bath, and prescribed salines with opium, through the day, and castor-oil every morning. At the expiration of a week his general condition was sufficiently improved to justify the attempt to introduce a No. 1. catheter, when a stricture was detected five inches from the meatus, through which it was impossible to penetrate. Although the examination was conducted with the greatest gentleness, it was followed by a severe attack of "stricture fever," which was only relieved by the administration of opium. The urethra being irritable, and the patient much exhausted, another week was permitted to elapse, during which time quinine and stimulants were administered, but the second trial was likewise futile, and followed by precisely the same results as the first. After the lapse of a third week, and while the patient was fully under the influence of

opium, a third attempt was made, but with no better success. I therefore determined to place the patient thoroughly under the influence of chloroform, when after very considerable difficulty, a No. 1 catheter was introduced, and a pint of highly offensive and turbid urine withdrawn. In the evening he had retention, which, after great difficulty, was relieved by a No. 1 gum catheter; there was considerable hæmorrhage, the patient losing from ten to twelve ounces of blood. He passed a restless night, and being unable to make water, the catheter was again had recourse to. (The house-surgeon having unfortunately omitted to retain the former one.) As it was found to be impracticable to re-introduce it, the man was again anæsthesiated, and another attempt made, but although the catheter passed to its whole length no urine followed, and it was evident that a false passage had been made. Opium and the warm bath were had recourse to, and in a few hours a small quantity of bloody urine escaped and continued to dribble away during the day and night.

When I saw the patient on the following morning his tongue was dry and brown: pulse feeble and rapid; skin hot, dry, and

blanched; and he complained of great tenderness upon pressure over the lower part of the abdomen; he was immediately ordered calomel and opium every four hours, and a turpentine fomentation over the seat of pain. For the next few days he continued in a very precarious state, but the symptoms gradually yielded, and in ten days from the retention the urine was free from blood; his health was, however, so much shattered by the accompaniments of the retention, that a month elapsed before any further instrumental attempt was made. Former experience having shown the impossibility of introducing any instrument excepting while under chloroform, he was once more anæsthesiated, and the dilator with difficulty passed into the bladder; the large sized tube was then employed, the stricture fairly split, and the dilator removed. A No. 12 catheter was next inserted, and the urine withdrawn; the bleeding was very trifling. Ordered a mixture of quinine and opium, two grains of the former and ten drops of the latter for a dose. In the evening he felt chilly and uncomfortable, but had no shivering; the urine flowed with moderate ease, and was triflingly tinged with blood.

On the following day he was able to walk

about the ward; the urine came away in a small but clear stream; the medicine was omitted, and his ordinary diet resumed.

On the second day after the operation, a No. 12 catheter entered the bladder without the least difficulty; the urethra was tender, but he did not experience so much pain as on former occasions; the after-treatment was continued at increasing intervals, and he shortly left the hospital capable of passing his own instrument.

The foregoing is a case of very considerable interest, as embracing many of the most important points in connection with stricture. The duration of the disease, the manner in which micturition was accomplished, the deplorable state of the patient's health, the supervention of "stricture fever" after every attempt at catheterism, the after-establishment of false passage, and the profuse hæmorrhage, are all evidences of the serious nature of the case, which consequently presented a severe test to the adopted treatment. The history satisfactorily shows the immunity from fatal consequences, rapidity of recovery, and complete restoration of the urethra to its natural size, which are the great characteristics of the operation.

Case II.

Stricture of Fourteen Years' Standing—Of a Dense Cartilaginous Character—Situated about the Triangular Ligament—Urine, which was Ammoniacal and Purulent, passed guttatim—Operation—Recovery.

John W., aged 45, a labourer, was admitted in December, 1857, suffering from stricture of the urethra, of fourteen years' duration. Seven years since, the urine having been for some weeks previously passed *guttatim*, he had retention, and applied at St. George's Hospital, where, after considerable difficulty, a catheter was introduced. He continued an in-patient until No. 4 could be passed, and then left, much improved both in health and manner of micturition. The stricture, however, gradually returned, and after several attacks of retention, and a generally increasing difficulty in relieving himself, he became an in-patient of the Westminster Hospital. At the time of his admission, the urine was passed every hour, with great straining, and frequently in drops; there was considerable hardness in the perinæum, and his health was much damaged, as evinced by emaciation, pallor, loss of appetite,

sleepless nights, and general feverishness; the urine was highly ammoniacal, and loaded with mucus and pus. A No. 1 silver catheter was attempted to be passed without success, there was complete obstruction at the triangular ligament, and although the point was firmly grasped, it could not be made to penetrate through the stricture. The patient was kept in bed and the bowels regulated, and on the third day from his admission, another attempt was made in the most gentle manner, but with no better result. Considerable irritative fever followed the two trials, and it was only after the expiration of two months, during which time six endeavours were made, that a No. 1 catheter was passed. The stricture was of the cartilaginous variety, about an inch in length, and gave that peculiar grating to the catheter so specially characteristic of cartilaginous obstruction. A large quantity of highly-offensive urine was withdrawn, and the catheter was retained. On the following day, a larger size was substituted, and on March 4th, the patient having been placed under the influence of chloroform, the dilator was with considerable difficulty introduced, and the No. 12 tube immediately passed. A No. 12 catheter was then easily slipped in, and the urine with-

drawn. On the following day there was no febrile disturbance, and the patient declared he made water better than he had done for many years. On the succeding day, or second after the operation, the urine was passed in a smaller stream, and with some scalding, consequently, a No. 11 catheter was used, the urine being much less fœtid than before. The stream continued small for a fortnight, but the urine was expelled in a much shorter time, and the frequency of micturition materially diminished; he now only required to relieve himself three times during the night, and the same during the day. No. 11 having been passed on alternate days, a No. 12 was introduced, and used every third and every fourth day in the manner described. Six weeks after the operation he left the hospital, making water in a perfectly natural manner, having been taught to pass a No. 12 with ease.

The foregoing, one of a class of strictures that offers the greatest impediment to the introduction of a catheter, is an excellent example of a formidable cartilaginous obstruction situated at a part of the urethra which, corresponding to its curve, gives greater trouble in the introduction of an instrument than any other. The patient had been the subject of a

stricture for many years, his urine had for months previous to his admission been passed *guttatim*, his clothes were constantly saturated, and his health was materially damaged by the hourly necessity for relief—an evil which depended upon the stricture, as proved by the large quantity of urine that was withdrawn when a catheter was introduced. All these difficulties were immediately overcome, and a large-sized catheter could be ever afterwards introduced with perfect facility. The offensive ammoniacal condition of the urine gradually abated, that fluid assumed a normal character, and the bladder being no longer irritated by its retention, the intervals between the times of micturition were prolonged. In a word, the patient was restored to complete comfort without having been detained in bed more than a day, and without experiencing a single unfavourable symptom; indeed, he did not suffer in the same ratio as during the attempt to simply introduce a catheter. To those who are uninitiated in the treatment of stricture, it might appear that, by keeping a catheter in the bladder, and daily increasing the sizes, the same results would have been obtained, but experience proves this plan of treatment to be utterly futile, and that as soon as the

catheter is removed, so soon does the stricture return.

Case III.

Stricture at the Bulb of Twenty-eight Years' Standing—Frequent Attacks of Retention of Urine—Infiltration—Fistulæ in Perinæo and Scrotum—Enlargement of the Prostate Gland.

H. R., a captain in the Navy, aged 58, consulted me after having for many years been suffering from the effects of stricture. He had had repeated attacks of retention of urine, and upon three occasions matter formed behind and in the scrotum, which eventually gave rise to fistulæ in those situations. At the time of his coming under my care, the greater portion of the urine escaped through these apertures, so that he was always compelled to make water in a sitting posture, or with the aid of an earthenware slipper held between the legs. His clothes were always saturated with these dribblings, and his health was materially damaged by constant straining, and the frequency with which he was compelled to make efforts to relieve the bladder. He had been under the care of many surgeons, both in London and elsewhere, but

without obtaining amelioration of his sufferings. Having tried various sized and kinds of instruments, I was fortunate enough, at the expiration of three weeks, to get a No. 00 silver catheter through the obstruction. This instrument was retained, and replaced by a larger size, until No. 3 could be passed, when the dilator was introduced, and the No. 12 tube immediately passed. The same after-treatment was adopted as in the preceding cases, and in three months from his first visit he was enabled to pass No. 12 without difficulty. The stream was good, the intervals much longer, and his health better than it had been for the previous seven years.

Another very similar case may be added—viz.: A gentleman, a solicitor by profession, was affected with a stricture of many years standing. He had for ten years experienced great difficulty in emptying his bladder, and the urine was loaded with mucus. Upon the first examination the catheter was arrested at a point three inches from the meatus; after some trouble it passed on to a second obstruction, near the membranous portion of the urethra, through which it was impossible at the time to penetrate. Upon subsequent trials, however, I got through the second obstruction, and

came upon a third, nearer the bladder, which was eventually overcome. The dilator was at once introduced, and the three strictures split. A No. 12 catheter was immediately passed in, and the urine withdrawn. Considerable pain was for a time experienced in this instance in expelling the urine, which was only effected with great straining. The cause, however, of this suffering was speedily apparent, for the patient passed three small calculi, which had formed behind the several obstructions, and were washed away when the urethra became enlarged.

Case IV.

Stricture in Front of the Triangular Ligament of Eighteen Years' Duration—Several Attacks of Retention—Infiltration and Abscess at the Root of the Penis—Operation—Subsequent Sloughing—Recovery after the Use of the Dilator.

J. R., a man of sallow aspect, was admitted into the Westminster Hospital under my care for stricture. He has been the subject of stricture for eighteen years, during which period he has had several attacks of retention of urine. The urine for some months had

been passed *guttatim*, and occasionally in the smallest stream; and a week prior to his admission, during a violent effort to relieve himself, he felt a sharp burning pain at the root of the penis, with slight relief to his urgency, but no urine escaped *per urethram*. In the evening he had a distinct rigor, was feverish, and passed a restless night; and on the following morning noticed that the penis was swollen, of a dusky hue, and painful to the touch; his urine continued to escape in drops. The penis was fomented with warm water; but all his symptoms increasing in severity, at the expiration of a week he was admitted into the hospital. I detected infiltration of urine, and an abscess at the root of the penis, which was immediately opened; and, to prevent further infiltration and afford a free outlet for the urine, an incision was made into the urethra in the perinæum, posterior to the stricture, by thrusting in a sharp-pointed bistoury in front of the anus, with the back to the rectum, and cutting upwards and forwards during the straining of the patient. The urethra being opened, a gum elastic catheter was pushed through the wound into the bladder, and the urine thus permitted to escape. The catheter was firmly secured,

and a poultice applied to the wound. In the course of a few days, the inflammation and swelling of the penis had subsided sufficiently to allow a No. 1 to be tried through the penis, but it was found impracticable to reach the bladder. Upon a second attempt, the catheter went farther, but would not penetrate the entire canal; the third attempt was more successful, and, after considerable difficulty, the bladder was reached and the urine withdrawn. The catheter was allowed to remain until the following morning, when it was replaced by the dilator, and the stricture at once split by passing a No. 12 tube. My usual plan of treatment was adopted, and the urine withdrawn. On the following day, the patient expressed himself as having passed a tranquil night, without rigors, or even chilliness; the urine flowed in a moderate stream, and with but slight scalding.

On the third day from the operation, a No. 12 catheter was passed without difficulty, and this act was repeated on alternate days for a fortnight; the intervals were then gradually extended, and in six weeks from the operation, the perinæal opening having healed, he left the hospital, passing his own instrument, and making water in a full stream.

The following case has been already published in the *Lancet* of December 8, 1866 :— Captain M. was sent to me from India, suffering from stricture of the urethra, complicated with fistulous openings in the perinæum and buttock, as well as a free opening between the bladder and rectum.

He stated that after several attacks of gonorrhœa, which laid the foundation for stricture, he had infiltration of urine, followed by abscess of the prostate. The infiltration resulted in the openings already alluded to, through each of which the urine flowed so much more freely than by the penis, that he was always compelled to undress and sit upon some large vessel when he required to pass urine. His previous suffering had seriously damaged his health, and when I first saw him he presented a most dejected aspect, being very much attenuated and hectic. The urine that passed per urethram only came *guttatim*, while that which escaped by the perinæum and buttock came by a tolerable stream. Of course he had what he described as frequent diarrhœa from the irritation caused by the urine in the rectum.

At my first examination I found it impossible to pass any instrument into the bladder.

The small catheter that could be introduced through the strictures immediately entered the opening in the rectum, which was ascertained to be about half an inch in length, and the parts were so painful and irritable, that it was impossible to proceed without resorting to chloroform. On a future day the patient was rendered insensible by chloroform, administered by Mr. Clover. After very considerable trouble I passed the dilator into the bladder and split the strictures with the No. 12 tube, and as there was so extensive a rent in the rectum, I deviated from my usual practice, and retained a gum elastic catheter in the bladder. The after-treatment was carried out in the ordinary way. The patient never had a bad symptom; the fistulous openings in the perinæum and buttock rapidly closed; the rectal opening healed but slowly, and several months elapsed before it was quite sound. He now passes his water in a perfectly natural manner, and a No. 11 can be easily introduced.

The first-recited case afforded another excellent opportunity of testing the efficiency of the treatment, and although undertaken at a time when the patient was hardly recovered from the effects of infiltration, it was attended with signal success; he never had a bad

symptom, and in six weeks left the hospital, so far cured that the stricture was entirely under his own control.

Case V.

Stricture of Thirty Years' Standing — Fistulæ in Perinæo—Incontinence of Urine—Temporary Impermeability of Urethra—Subsequent Treatment by Small and Large Dilators—Recovery.

J. R., aged 62, a well-formed and ordinarily a robust man, but now greatly emaciated, was admitted in 1857 under my care. He states he has been the subject of stricture thirty years, and attributes the origin of the disease to frequently-contracted gonorrhœas. Fifteen years since he was the subject of retention of urine, which was at that time relieved by the introduction of a very small catheter, but being unable to continue in the hospital where he obtained relief, the contraction speedily became worse, and an abscess subsequently formed in the perinæum, which, upon being opened, gave exit to pus and urine, the latter continuing to escape more freely through the perinæal opening than through the urethra. He now became an inmate of a provincial hospital, where every endeavour was made to get

an instrument into the bladder without success, and he eventually left unrelieved, the urine continuing to dribble away, partly from the urethra and partly through the perinæal opening, so that he was compelled to wear an apparatus specially made for the purpose of hindering the urine from saturating his clothes. No treatment having hitherto been of service, he came to London, and placed himself under the care of the late Mr. Charles Guthrie, who eventually requested me to admit him under my care. Upon examination, I found his statement to be true, and that the urine continually escaped. A No. 1 catheter was employed, but it was impossible to pass it beyond the membranous portion of the urethra, which appeared to be so encroached upon as to be almost obliterated. Various attempts were made from time to time without success, and he was, consequently, placed under the influence of chloroform, and a No. 1 catheter was forcibly passed into the bladder. This was permitted to remain, and on the following day was replaced by a gum elastic one. The patient did not suffer materially from the forced catheterism, but was relieved by the withdrawal of a large quantity of urine, and in three days after passing the No. 1 silver ca-

theter, I was enabled to introduce the dilator and split the stricture. The patient was then placed in bed, and the mixture of quinine and opium ordered. In the evening he was attacked with rigors, and experienced considerable scalding in passing his water, which he continued to do in a narrow stream, and in small quantities. On the day following he was better, but the urine did not run freely, and on the second day after the operation, the No. 12 catheter was, with some little difficulty, passed into the bladder. A small quantity of urine escaped, and upon this occasion the catheter was allowed to remain five minutes, and was then withdrawn. The same line of treatment was adopted for many alternate days, but with a No. 11 instead of a No. 12 catheter, the stricture being irritable, and not admitting the larger size. A No. 12 was, however, eventually passed, and being taught to use the catheter for himself, the man returned to the country, making water in a full stream, and declaring himself perfectly cured. This patient was under treatment nine weeks.

Three cases of a precisely similar character have been under treatment, where incontinence of urine, the result of over-distension

of the bladder, was present, the patient suffering from the absorption of the deleterious properties of the retained urine, the effects of which were recognised by drowsiness, pallor, nervousness, and tingling or itching of the skin. In each case the patient has been subjected to the same treatment, and with similar success.

Case VI.

Traumatic Stricture—Severe Hæmorrhage—Elastic and Recurrent after Dilation—Operation—Recovery.

J. H., aged 48, a master-builder, consulted me in June, 1860, in consequence of continued difficulty in passing his water. He stated that five years since, while walking along a roof, he suddenly fell across a beam. His perinæum was seriously bruised, and he experienced great pain in the urethra, from which a considerable quantity of blood escaped. He was taken home, and a Surgeon passed, with some difficulty, a gum elastic catheter, which was retained. The hæmorrhage gradually subsided, and the catheter was removed. He, however, soon became aware that his urine was passed with greater difficulty than formerly, and that he was compelled to strain

a good deal to get rid of the contents of the bladder. He again consulted a Surgeon, who passed a No. 2 catheter into the bladder, and gradually increased the sizes of his instrument until a No. 12 was attained to. The catheterism being discontinued, the stricture soon returned, and he again consulted the same gentleman, who recommended the same, treatment, and soon arrived at No. 12. The convalescence was, however, of short duration, for, upon the treatment being discontinued, the contraction speedily recurred. Upon examination, I found no difficulty in passing No. 2, but the stricture would not admit a No. 4, and No. 3 was very tight. I therefore immediately pushed in the dilator, split the stricture, and afterwards passed a No. 12 with facility. This treatment was perfectly successful. There was never the least hesitation in introducing a No. 12 afterwards, and he continued to eject his water in a copious stream without straining and at the ordinary periods*.

* I may refer to two cases of severe traumatic stricture, treated by the same method by Mr. Heath, and published in the *Lancet*, August 31, 1861, as confirming the applicability of this treatment to such forms of the disease.

Case VII.

Stricture of Eight Years' Duration—Difficult Micturition—Occasional Retention of Urine—No complications.

W. B., aged 50, a clerk in a Government office, was, in 1858, sent to me by Mr. Jones, of Kennington, in consequence of stricture of the urethra, attended with a continual difficulty in micturition, and complete retention of urine after any excess. At the time of my seeing him he was suffering from retention, which was immediately relieved by the introduction of a No. 2 catheter. Although there was no special difficulty, upon a subsequent occasion, in introducing a No. 3, yet as it was very tight, and in order to relieve him from his often-recurring retentions, I advised that the stricture should be split. The patient consented. The dilator was introduced, and the stricture immediately split. He was not subjected to the influence of chloroform. The pain was trifling, and after the operation he walked home. Such after-treatment was adopted as has been already described, and he occasionally presents himself to his surgeon, when a large-sized catheter can be passed with ease.

Case VIII.

In June, 1859, I was consulted by a gentleman who had come from Paris for the purpose of having his stricture split. He had for many years suffered from this complaint, which had latterly become so aggravated that his urine would only pass in the smallest stream, and occasionally by drops. Upon his first consulting me, various catheters were tried without success. Nothing would penetrate the stricture, the point of the instrument becoming entangled in what he described as an old false passage. He was desired to remain perfectly quiet, to take castor-oil every other morning, have warm baths, and renew his visit in a week. Upon the second trial, and after very considerable difficulty, I was enabled to pass No. 1 into the bladder. A considerable quantity of urine was withdrawn, with great relief. He was recommended to avoid exercise, and to come again in three days, when another attempt was made with the No. 1 that had passed before, but without success. A week was, therefore, permitted to elapse before any further trial, when, after continued perseverance, I succeeded with a No. 1, which was

allowed to remain for an hour, and was then replaced by No. 2. In the evening he had retention, but it was speedily relieved by the No. 1 catheter. He continued to attend every third day until No. 2 could be passed with some degree of facility, when the dilator was introduced and the stricture split, and No. 12 catheter immediately introduced. The urine then flowed through; and he walked home, having directions to remain quiet, and take the quinine and opium mixture.

On the second day from the operation a No. 12 was easily slipped into the bladder; he had had neither hæmorrhage nor shivering, and the utmost he complained of was a slight scalding. In ten days from the operation, this gentleman passed his own instrument, and in a fortnight returned to Paris, making water with ease, and using No. 12 without the least difficulty.

I saw this patient at the beginning of the present year. The No. 12 can now be passed with the greatest facility. He has never had either retention or difficulty since the operation, and may be considered well.

The cases which have been already narrated are selected as representing the most severe forms of stricture, and as being attended by

complications which would materially militate against any ordinary operation, and must have necessitated months of surgical attendance if the ordinary dilating plan had been selected. In every one of the recited cases the treatment was successful, and with but a little instruction the patients were enabled to maintain the after-control of the bladder, by occasionally passing a bougie. Although this treatment is specially advocated in the extreme forms of the disease, it is equally applicable in the milder or less complicated, more especially in cases where strictures are irritable and unyielding, and where catheterism is attended with difficulty and severe suffering.

In such instances the dilator gives immediate relief, and experience has proved that by splitting the stricture, tension is immediately overcome, and the passage of the catheter is made so facile, as to be deprived of any but the most trifling pain. The following cases will best illustrate this :—

Case IX.

J. R., aged 38, a barrister, consulted me in January, 1859, complaining of stricture of the urethra, from which he had suffered for the

last eight years. He stated that he had had three attacks of gonorrhœa, the discharge accompanying each attack lingering for a considerable period, and necessitating the use of stimulating injections for its cure. During 1858 his symptoms became much aggravated: He was obliged to strain greatly to get rid of the contents of his bladder: the stream of urine, which had become spiral, and occasionally forked, was very small, and his sufferings were further increased by the protrusion of piles during his efforts for relief. He had suffered from retention of urine, which upon one occasion followed a debauch, and on another resulted from inability to relieve himself during a railway journey.

Upon examination, I detected a stricture situated about the membranous portion of the urethra, through which a No. 2 catheter could, without material difficulty, be passed. The stricture was of short extent, apparently cartilaginous, and it grasped the catheter tightly. Having explained to the patient the *rationale* of the operation, he at once consented to its performance. The dilator was, therefore, immediately introduced, the stricture split, and a No. 12 catheter substituted for the purpose of withdrawing the contents of the bladder. There

was the slightest possible bleeding, and he stated that the operation was not more severe than the passing of a catheter. I directed him to remain at home during the afternoon, and to take the quinine and opium mixture.

This gentleman continued his attendance on alternate days for a fortnight; he never had the slightest difficulty in passing his water; the pain was very trifling, and a No. 12 catheter slipped into the bladder with the greatest ease. Being now taught to pass his own instrument, he was dismissed, cured.

Case X.

J. J., aged 61, a gentleman, residing in Wales, consulted me in December, 1858, for stricture of many years' duration. He stated that during the previous year, the stream of urine had become materially decreased in size: that he was obliged to pass water every two hours, that the urine was highly ammoniacal and loaded with mucus: that the irritable state of his bladder compelled him to make water the instant he had the desire to do so: and that his clothes were constantly wetted, from his inability to eject the urine in a continuous stream. His rest was broken, and his health materially damaged by

the absorption of the noxious properties of the retained urine. Upon examination, I detected a stricture at the triangular ligament, which would only admit a No. 1 catheter. The obstruction was dense and unyielding, and about half an inch in length. As the patient was somewhat plethoric, I prescribed a purgative, and requested his attendance on the following day, at which visit the dilator was with slight difficulty introduced, and the stricture split. A No. 12 catheter was now substituted for the dilator, and the urine withdrawn. In this case, as in the former one, the cure was uninterrupted by a single unfavourable symptom; the patient was merely confined to the house one afternoon, and the same plan of after-treatment having been carried out, he, at the end of a fortnight, returned to Wales, capable of passing his own catheter.

I have had several letters from this gentleman since, in all of which he declares himself free from the slightest difficulty in passing his water or introducing his catheter.

Case XI.

Obstinate Stricture of more than 20 years' duration, where great difficulty was experienced in passing any Instrument into the Bladder, and where the Operation was undertaken at the time the patient was suffering from Swollen Testis.

On Oct. 20, 1862, a gentleman was brought to my house by Mr. May, of Tottenham, suffering from the effects of stricture of the urethra, for which disease he had 18 years previously consulted M. Ricord. The patient, an otherwise comparatively healthy man, æt. 43, informed me that for a considerable time he had experienced increasing difficulty in passing his urine, which came in a very small stream, with great straining, and that it was frequently only passed in drops; that he had had a series of rigors, and that his urine frequently contained a large quantity of tenacious mucus. Upon examining the urethra, I detected a stricture at the bulb, through which I failed to pass a No. 1 catheter. There was slight bleeding, but apparently no further discomfort. On the 22nd, Mr. May wrote me that his patient was too ill to repeat his visit in consequence of severe rigors, succeeded by

irritative fever. On the 27th he again consulted me, when I succeeded in passing the No. 1 through the obstruction at the bulb, but it was arrested at a second stricture about the membranous portion of the canal. The second attempt was followed by the same train of symptoms as the former, and I did not see him again until November 6th, when I still found it quite impossible to pass the catheter through the second stricture. Other trials were made during the remainder of the month, and it was only at the commencement of December, and after very considerable difficulty, that I succeeded in passing a catheter into the bladder; this was, however, followed by swollen testis, from the effects of which he was confined to the house for three weeks. On January 24th, although the testicle was still swollen, I succeeded in passing the catheter, which, under the circumstances, was retained for two hours, and upon its removal I passed the dilator, splitting the strictures with the No. 12 tube, and substituting a No. 12 catheter, through which the contents of the bladder escaped. The catheter was now removed, and the usual medicine was prescribed. Although he had been previously the subject of rigors after manipulation, and frequently also with-

out any attempt at catheterism, yet he had no shivering or unfavourable symptom of any kind, and his urine was passed in a large stream, but with some scalding. On the 26th the No. 12 catheter was introduced without the least difficulty, and the after-treatment was carried on for another fortnight, after which he succeeded in passing the catheter for himself, and he has continued to do so ever since. His health is now quite re-established, and so far as the stricture is concerned he is his own surgeon.

The interest of this case consists in the difficulty that was experienced in getting a catheter into the bladder, the strictures being of such an unyielding character as to frustrate the many attempts that were made to overcome them. The constitutional symptoms were, prior to the operation, very marked, rigors following almost every attempt at catheterism, and hernia humoralis succeeding the passage of the instrument into the bladder; and yet, after the strictures were fairly split, no unfavourable symptom of any kind was experienced.

Case XII.

Obstinate Stricture of many years' duration for which Mr. Syme's operation had been performed by himself —Internal Urethrotomy by another surgeon, and subsequently Mr. Syme's operation repeated—Return of the obstruction and inability of the patient to make water without the aid of a No. 2 Catheter—Immediate Dilatation—Cure.

Captain T. was kindly sent to me by Mr. Cutler under the following circumstances:— Seventeen years since he had stricture, which gradually became more and more contracted until, in 1853, he consulted Mr. Syme, who passed a No. 2 into the bladder, and subsequently performed the cutting operation in the perinæum, which he advocates. The patient was confined to his bed for sixteen days, and subsequently No. 9 could be introduced with moderate ease. The stricture, however, soon became again contracted, until only No. 3 would enter the bladder, when he again placed himself under the care of Mr. Syme, who dilated it to No. 9, the passage of bougies being attended with very great suffering. After leaving Mr. Syme, however, the stricture soon re-contracted, and internal urethrotomy was performed by a surgeon in England, after

which operation he had infiltration of urine, and his life was placed in considerable jeopardy. The operation was not attended with the slightest benefit, and he was compelled to pass a No. 2 cacheter every time he required to make water. His sufferings being now very great, he had Mr. Syme's operation performed a second time, and a No. 9 catheter was again attained; this size, however, could not be maintained, and he soon went back to No. 8, No. 7, and, in four months, to No. 4, and then to No. 2, which, as before, he is now obliged to pass every time the bladder requires relief. It was under these circumstances that Mr. Cutler suggested his consulting me, and after explaining to him that I had never had so complicated a case, and that I could not answer for the result to be attained, I consented to perform my operation. On March 30, while under the influence of chloroform, I passed the dilator, and the No. 10 tube, but so much force was required to press the tube between the blades, that I was compelled to wrap a towel around it to protect my hand, and the tube was thrust down three or four times in order that the strictures might be effectually split; the urine was removed, and he took the usual mixture. In the evening I passed a No. 6

catheter without the slightest difficulty, and on the following morning he informed me that he had slept well, and had not experienced the least pain or inconvenience of any kind; this time I introduced a No. 7 as easily as I had done the No. 6, and removed the urine he was desired to discontinue the medicine and take his ordinary diet. On the 22nd I found him perfectly well, and I introduced a No. 6 with ease, and in the afternoon he visited some friends at Northfleet, near Gravesend. On the 23rd No. 9 was passed, and on the 26th No. 10. On April the 1st he passed his own No. 9 without the least difficulty, and in a week afterwards he returned home, stating that he could pass his water as well as he ever had done; of course directions were given him to continue the after-treatment.

The above case afforded an opportunity of testing the practicability and efficiency of the operation to the utmost. It belonged to a class for which the operation devised by Mr. Syme appeared specially applicable, and yet the disease returned within a short period of its performance, requiring two other operations, both of them perfectly useless, so far as protracted improvement was concerned, and of a character which not only placed the life of the

patient in considerable danger, but necessitated his being confined to his bed: in the first instance for sixteen days, and in the second for six weeks. Whereas by the adoption of the operation I advocate he never went to bed at all, could pass water with perfect freedom from the time of the operation, and on the third morning returned to his friends at North-fleet, not having suffered the slightest inconvenience of any kind.

What explanation can be given of such an occurrence? It is so extraordinary that had not the case been seen by others a doubt might have arisen as to the accuracy of my statement. I believe the whole secret depends upon the obstruction only being ruptured, and that no irritation or inflammation is excited by retaining a catheter in the bladder. It is impossible that any structure but the stricture can be ruptured; and when so ruptured it is left to heal of its own accord, the medium of union being dilated by the subsequent passage of bougies. But supposing that only a temporary advantage had been gained, and the operation had required to be repeated. The patient had not suffered anything, and had only been confined to the house a day and a half, and this more as a precaution than a necessity. It

will be noticed that in this instance the catheter was passed in the evening, and again on the following day, contrary to my usual custom. I shall again allude to this subject at the end of the book.

The following is an excellent example of the irritability caused by retaining a catheter in the bladder for the rapid cure of stricture; the case is well known, and was related by me in some observations at the Royal Medical and Chirurgical Society.

Case XIII.

Mr. S., a Solicitor, residing in the country, consulted me on April 28, 1862, in consequence of stricture of the urethra, from which he had been suffering for more than thirty years. He informed me that for more than twenty years he had experienced difficulty in passing his water, and that he had been under the care of two most experienced surgeons in London, one of whom had devoted himself specially to the consideration of such diseases, and that having with great difficulty passed a small gum elastic catheter into the bladder, the surgeon alluded to tied the instrument in, and on every alternate day replaced it with a larger one, until a size

was attained that corresponded with the natural calibre of the urethra. He expressed himself as being gratified at the success which followed this plan of treatment, and fully expected the full size could be afterwards maintained; in a very short time, however, the stricture contracted, so that he gradually receded to No. 2, which could only be introduced after considerable suffering, and with great perseverance. His health having been much damaged by the confinement necessary to carry out this treatment, and not having derived any permanent benefit from it, he declined, although he was urgently solicited to do so, to have the same method again employed. Under these circumstances he was urged to permit internal urethotomy to be performed; but having a dread of the knife he likewise objected to that method, and after considerable suffering and frequent disappointment in the passage of even his small catheter, he determined upon the operation by splitting. So fearful was he of the consequences of the passage of a catheter being attempted, in consequence of frequent attacks of retention after the small instrument had been used, that he would not allow me to examine the urethra, but decided to come to town and have the operation completed

without any previous examination, As he was a remarkably intelligent man, and could with great accuracy detail his symptoms, I consented to comply with his request, and on May 13, 1862, with very considerable difficulty, I passed a No. 2 silver catheter, and upon its removal introduced the dilator and split the strictures with the No. 10 tube. Although of a very nervous temperament, he never gave the slightest expression of pain, either when the operation was performed, or when the No. 10 catheter was substituted for the dilator to remove the urine. Not being aware of his peculiar temperament, I prescribed the usual medicine of quinine and opium, as I was anxious, if possible, to prevent his having any shivering, as under the previous treatment he had suffered seriously from rigors and their accompanying fever. The opium, however, acted as a poison and depressed him exceedingly, so that for some days his pupil was contracted, and he was generally drowsy and uncomfortable. In the evening he felt chilly, but it did not amount to shivering; he passed his water without the least difficulty, but with some scalding. On the 15th I passed the No. 10 with ease, and as the weather was fine and warm, I directed him to take a drive.

On the 17th the catheter was again passed, and from this time he has gone on uninterruptedly well; he visits me once in about five weeks, the No. 10 is maintained, he has never taken a dose of medicine, and has gained more than a stone in weight, being now capable of going through a long day's shooting without the least fatigue.

The following case, although attended with the complication of infiltration of urine and perinæal and scrotal fistulæ, is a more striking example of the inutility of retaining a catheter in the bladder for the cure of stricture.

Case XIV.

George R., æt. 42, a coachman, was sent to me by Mr. Hemming, of Kimbolton, in May, 1863. He states that for twelve years he has been suffering from the effects of stricture, with increasing difficulty in micturition; that in 1854 he was an inmate of St. Thomas's Hospital. The surgeon under whose care he was placed having had considerable difficulty in passing a No. 1 catheter; this was retained and replaced from time to time by others, until a No. 11 could be easily passed, when, believing himself well, he returned to the country. But

the stricture re-contracted at once, and in 1858 he became an in-patient of St. Bartholomew's. Various attempts were made to pass a catheter, but without success, each attempt being followed by stricture fever. His health being much shattered, he returned to the country, passing his urine in the smallest stream, and occasionally by drops. In 1862, after great straining, the urethra gave way behind the stricture, and he became the subject of infiltration of urine; matter formed, and the abscess burst, leaving an opening in the perinæum and scrotum, with considerable condensation in these situations, as well as above the root of the penis, corresponding to the symphysis pubis. Mr. Hemming with some difficulty passed a small catheter, and gradually dilated the strictures (for there were two, one at the bulb, and the second at the membranous portion of the urethra), until a No. 8 could enter, but as soon as the catheters were discontinued, so did the contraction recur. Upon examination I found a No. 4 catheter could be passed into the bladder, which in the hope of preventing urine burrowing in the scrotum, and so adding to his present mischief, I retained. The patient being desired to make his water entirely through the catheter, the

different sinuses were laid into one, and he was desired to rub in mercurial ointment and iodine to the condensed mass on the scrotum and perinæum. The catheter in a few days becoming loose, was replaced by a larger one, and no urine was permitted to escape excepting through the catheter; the result of this was a considerable reduction in the swelling which gradually became soft, but the fistulæ did not heal. After two months' continuance of this method the catheter was removed, and although an attempt was made on the following day to pass the same catheter, it was found that the stricture had so contracted as only to admit one four sizes less; the urine likewise escaped through the unhealed opening in the perinæum. The catheter was again replaced, and the same treatment continued for another month, but with a like result—viz.. that when the catheter was removed the stricture became as small as ever, and in a week would only admit a No. 4. Under these circumstances I determined to try whether any benefit would arise from splitting the strictures, and having passed the dilator, split them with a No. 10 tube. No catheter was retained in the bladder. For the first four days there was slight weeping from the fistulæ, but at the expiration of a week

they had entirely healed, and a No. 10 catheter could be passed with the greatest ease. The patient returned to the country, and the following is an extract of Mr. Hemming's letter to me:—"My dear Sir,—You have indeed achieved a victory in the case of George R., and I hope you will publish it in your next series of cases. It is doubly valuable from your long continued and pertinacious attempts to conquer the stricture and thickening by the old method before you tried your own; the failure which followed your two months' trial, and the immediate success which your own method brought about."

The above cases are excellent examples of the inutility of retaining a catheter in the bladder, although after its removal it may be reintroduced at short intervals, and the after-treatment be effectually carried out. I may say I have never seen a *bad* stricture benefited by such treatment, and for the last twenty years I have abandoned such a method as useless, the large size cannot be maintained, and the stricture very speedily re-contracts.

The following three cases are instances of obstinate unyielding strictures in which long continued catheterism was unsuccessful, but where the dilator relieved the patient in a very short period.

Case XV.

The Earl of ——— consulted me on October 19, 1862, by the advice of Dr. ——, of Dublin. He stated that for many years he had suffered from stricture of the urethra, which had been occasionally benefited by the passage of a bougie, but that for some time his infirmity had been getting worse, and that he could now only make water in the smallest stream, with great straining, and that he was unable to retain his urine for more than an hour and a half. Upon examination, a stricture situated at the bulb was detected, through which a No. 1 catheter could be passed, but it was arrested at the membranous part, and I did not succeed in passing it into the bladder. There was slight bleeding, and he afterwards suffered severe scalding pain when the urine was evacuated.

The same treatment was persisted in until October 30th, when a No. 2 was passed fairly into the bladder; this was repeated on November 3rd, 5th, and 7th, and on the 10th, having at his own request been placed under chloroform, the strictures were split with the No. 12 tube, and the urine was removed with a No. 12 catheter. On the following morning he in-

formed me that he had not suffered any inconvenience beyond being compelled to urinate every two hours, when the scalding was severe.

On the 12th the scalding had somewhat subsided, and a No. 12 catheter was passed with great ease; this treatment was repeated on the 14th, 16th, 18th, 21st, 24th, and so gradually increasing the intervals, and on the 9th Dec. I saw him for the last time, as he could now pass his own No. 12 with perfect ease. Lord ——— called upon me in June of the present year, and informed me that he now made water as well as he ever remembers to have done, and that he could retain his urine for many hours; I passed the No. 12 catheter without the slightest impediment or pain.

Case XVI.

The Hon. Colonel ———, who was invalided from China, in consequence of a severe stricture, consulted me in May, 1862. His history was very similar to the one just related, and he experienced about the same difficulty in voiding his urine. The bladder was, however, more irritable, and he was compelled to urinate the instant he had the desire to do so, so that while walking out he had to consider

whether he should be in the neighbourhood of an urinal at certain intervals, so that he might relieve himself without such special urgency. On May 10th, I tried to introduce a catheter, but failed, he became faint, and I desisted; this was repeated upon three occasions with a like result. On May 20th, however, I succeeded in passing a No. 1 catheter, and on May 31st, whilst under the influence of chloroform, the dilator was passed, and the strictures were split with the No. 12 tube, the 12 catheter being afterwards substituted. In the evening he was comfortable, and did not complain of pain; there was no shivering or constitutional disturbance of any kind. On the following day he walked out, and on June 2nd I again passed the No. 12 with great ease. The after treatment was carried out at increasing intervals, and in July of the present year, after an interval of four months since a catheter had been passed, and fourteen months after the operation I passed a No. 13 sound with great ease. This gentleman has never had the slightest difficulty in passing his water since the operation, was only confined to the house one afternoon, and is now in robust health.

Case XVII.

Sir C. S——, an officer who had seen much service, consulted me at the request of Dr. Pettigrew. He had been for many years a martyr to stricture, and as he expressed it, had taken a house in Yorkshire to bury himself from society, his infirmity not permitting him to enjoy those pleasures which his position and age entitled him to expect. Very many trials had been already made to effect an entrance into the bladder, but hitherto without success. He was compelled to make water every hour or hour and a half, and even during the intervals his water would escape involuntarily, so that his clothes were constantly saturated. On December 12, 1861, I first tried to pass a No. 1, but like other Surgeons, was foiled in my attempts to pass the instrument into the bladder; there was a dense stricture at the bulb which defied the utmost patience. The 16th, 18th, 21st, 23rd, and 26th were expended in fruitless attempts. On the 28th a No. 1 was passed into the bladder, and retained for half an hour. On the 30th I again failed to effect an entrance. On January 1st, 3rd, and 5th, the catheter was passed, and each time into the bladder, and on January 8th the operation

was performed without chloroform, and the No. 12 catheter was immediately introduced; he hardly experienced the least pain, and was out on the following day. The after-treatment was carried out, and in three weeks from the time of the operation he felt himself so improved as to abandon his idea of going into Yorkshire, and as he was now offered another command provided he could leave England by the beginning of March, I strongly advised him to accept it. In the mean time he succeeded in passing his own instrument with perfect freedom, and by the time stated he left England to assume a command abroad.

The last case was one of not only great importance, so far as the patient was concerned, but was an excellent example of the advantage derived from this particular treatment, as it would have been quite impossible for him to have done as he did had any other plan been adopted.

Case XVIII.

Stricture of Long Standing Complicated with Disease of the Bladder, and probably of Ureters and Pelvis of the Kidney.

J. S., æt. 35, a merchant, consulted me at the request of Dr. S., of Liverpool, in consequence of his suffering from long-continued incontinence of urine, which for a considerable period had necessitated his wearing an urinal.

When I first saw this gentleman in January of the present year, he informed me that for many years he had suffered from stricture and increasing difficulty in ejecting his water, and that two years since he suffered from total retention when he was in great agony, and no catheter could be passed. The urine, however, eventually dribbled away, and it had continued to do so ever since, excoriating the penis and scrotum, and keeping him in continual discomfort. He also complained of great fulness about the lower part of the abdomen, and he walked with considerable difficulty.

The history of his case assured me he was suffering from retention of urine, although it had been escaping involuntarily during the last two years, and against his inclination, I per-

suaded him to permit me to pass a catheter. This however, was not accomplished without great difficulty, a No. ½ being eventually introduced, when nearly two pints of highly offensive ammoniacal and purulent urine was removed. As it was evident that the bladder had lost its contractile power the catheter was again had recourse to in the evening, and a further quantity was removed, and for the purpose of keeping the bladder as empty as possible, the catheter was passed three times on the following day. As the unyielding nature of his stricture rendered it difficult to, at all times, pass the catheter, I determined to operate at once, and consequently on January 20th (the No. 1 catheter having been previously retained for a short time), I passed the dilator and split the strictures with the No. 10 tube, his meatus not admitting a larger-sized catheter than No. 10. In the evening he had a rigor and passed a restless night, and it was necessary to confine him to the house. On the following day, the catheter was had recourse to to remove the urine, and it could be passed with facility. On the second day from the operation, it was found that he could pass water in a small stream, although he was as yet not capable of emptying the bladder; the

catheter was consequently more frequently passed than is usual, but as the great impediment had been overcome, he was able to pass a No. 6 gum-elastic for himself, so as to ensure the bladder being entirely emptied three times in the twenty-four hours. In a fortnight from the operation, he could very nearly eject the whole of his urine, and in a month he returned to Liverpool immensely improved in health, being capable of micturating in a full stream, and able to pass a No. 9 silver catheter without any difficulty. In June of the present year, this gentleman consulted me again, having suffered from an attack of inflammation of the bladder, but there was no difficulty in introducing the No. 9, although he had not done so for three weeks prior to my again seeing him.

Case XIX.

Impassable Traumatic Stricture of Twelve Years' Standing—Retention requiring Operation—Cure of the Stricture by Holt's Dilator—With Clinical Remarks—Under the care of Mr. Holt and Mr. Heath. (From the Notes of Mr. Beadles, House Surgeon to the Westminster Hospital.)

The following case has been already published in the 'Lancet' for June 13, 1863 :—

"Joseph S., aged 34, was sent up to the Westminster Hospital on the 27th January, 1863, by Mr. Cubitt, of Stroud, to be under Mr. Holt's care for a severe stricture of the urethra.

History.—Twelve years ago the patient slipped off the roof of a house, and fell about nine feet astride the edge of a water butt. He lost a good deal of blood, but no urine passed, and repeated attempts at catheterism were made by three different practitioners, but without success. He then took some drops (tincture of muriate of iron ?), and in twenty-four hours the urine began to dribble away, and has continued to do so ever since, the patient wearing a bladder for its reception. In December last he applied to Mr. Cubitt, who made various

unsuccessful attempts to introduce a catheter, and then sent him to Mr. Holt.

On admission the urine was constantly dribbling away, and his bladder was evidently much distended. The patient is continually straining to void urine, which causes him the greatest agony each time it passes. There is no scar in the perinæum, but the urethra in the region of the bulb can be felt to be thickened and very hard.

January 29th.—Mr. Holt made a careful attempt to introduce an instrument through the stricture, but was unable to do so.

February 1st.—A second attempt was made to pass a catheter, but unsuccessfully, and repeated on the following day with the same result.

3rd.—The patient became unable to pass any urine, and suffered much from the distension of the bladder. Mr. Beadles, the House Surgeon, therefore attempted to pass a catheter, but unsuccessfully, and then requested Mr. Heath, who was in the hospital, to see the patient, and after very considerable difficulty he succeeded in getting a No. 1 silver catheter through the stricture and down to the prostate, where it grated against a calculus, and upon passing the finger into the rectum, a

number of calculi were felt imbedded in the prostate. It was found impossible to reach the bladder with the catheter, which was therefore withdrawn, after giving exit to a small quantity of glairy fluid (not urine). The patient subsequently passed a small quantity of urine with relief to the urgent symptoms. In the night these latter became aggravated, and he was in great pain from distension of his bladder. The House Surgeon accordingly sent to Mr. Holt, who being unwell, and finding that Mr. Heath had seen the patient, requested him to visit the hospital for him.

Mr. Heath put the patient under the influence of chloroform, and tried to introduce a catheter, and after several efforts, succeeded in introducing a No. 1 down to the prostate, where it again touched the calculus, but would not enter the bladder. Under these circumstances, Mr. Heath determined to make an incision into the perinæum, extract the prostatic calculi, and relieve the bladder. The patient being tied up for lithotomy, and the No. 1 catheter being held as a guide, Mr. Heath made an incision immediately above the anus, and cut down upon the catheter directly in front of the prostate. The finger introduced into the wound was passed carefully into the bladder,

and there discovered a large vesical calculus, in addition to numerous calculi lodged in the prostate gland. With lithotomy forceps, an attempt was made to extract the stone, but Mr. Heath found it was adherent to the left side of the bladder. A large quantity of urine escaped, and upon another attempt at removal the stone broke in the forceps, and was withdrawn piecemeal. A large number of small prostatic calculi were removed, and there was then found to be a quantity of calculous matter adherent to the coats of the bladder in various parts; this was scraped away with the scoop as far as possible, and removed. The patient was put to bed and had a dose of opium.

On examining the calculi carefully, they were found to consist of two distinct formations, vesical and prostatic, the whole mass weighing 1,084 grains, or 18 drams and 4 grains, and the prostatic calculi alone 46½ grains. The prostatic calculi averaged the size of barleycorns, and were of a dark brown colour. On fitting together the portions of the vesical stone there were found to be two distinct calculi. One composed of fusible calculus around a nucleus of uric acid, the pieces of which weighed 832 grains, and which had evidently been adherent to the coats of the bladder, and the other of

very remarkable shape, and weighing 104 grains, which consisted of a nucleus of uric acid very smooth, and of the size and shape of a sparrow's egg 399 grains, with a surrounding portion of phosphatic matter, more resembling an unciform bone than anything else. These latter pieces came away in the forceps in the middle of the operation, but their source was very doubtful. The débris of phosphatic matter removed from the bladder weighed 101½ grains.

4th.—The patient is perfectly easy, the urine comes entirely by the wound in the perinæum.

10th.—There has been no pain at all in the bladder until to-day, when the patient complained of pain about the bladder, resembling that from which he suffered before the operation. Mr. Holt ordered him 40 drops of tincture of opium.

13th.—He has occasional fits of spasm, but is easy in the intervals.

19th.—The spasm and pain continuing, and the patient's health suffering from the constant distress, Mr. Holt had him put under chloroform, and proceeded to examine the bladder through the wound. After a careful examination, Mr. Holt succeeded in extracting two small pieces of stone, apparently part of the outer coating of the former calculus. The care-

ful use of the finger showed the lining of the bladder to be in a very rough condition, but the great depth of the perinæum made it difficult to ascertain with certainty the existence of any more pieces of stone.

20th.—Is quite easy, and his pulse has come down from 120 to 84.

23rd.—General condition very satisfactory. The urine proving very alkaline, he was ordered dilute hydrochloric acid in infusion of buchu thrice a day.

26th.—Mr. Holt made an attempt to introduce a catheter per urethram, but did not succeed, and desisted on account of producing hæmorrhage. The urine all passes through the wound, but he can hold it for a short time, and then voids it into a bed pan.

March 2nd.—This morning, part of the urine passed per urethram in a small stream, and was clear, and acid in reaction. Mr. Holt made another attempt to pass a catheter, and introduced it a little farther than on the last occasion, but did not reach the bladder; patient very comfortable.

16th.—Mr. Holt succeeded to-day in introducing a No. 2 silver catheter into the bladder, and this was tied in. No urine passed by the perinæum during the day, and only a very

small quantity at night. He has no straining or pain in the bladder, and the urine is clear.

18th.—Mr. Holt removed the No. 2, and introduced a No. 3; this was withdrawn, but was again passed by the House Surgeon in the evening.

19th.—No. 3 catheter was again tried, but without success, and a No. 2 was passed with a good deal of difficulty. The urine has for the last two days passed entirely through the wound in the perinæum, which is, however, of very small size.

21st.—The urine has passed in a very fine stream this morning. The stricture had evidently contracted, and no instrument could be passed.

24th.—Mr. Holt succeeded in passing No. 2.

28th.—The No. 2 was retained in the bladder until to-day, when Mr. Holt withdrew it, and succeeded in passing his dilator, when the stricture was immediately split up, and a No. 10 catheter passed. After the operation the patient had no bad symptoms, and only felt a little sore.

30th.—No. 9 passed without any difficulty.

April 1st.—No. 10 again passed, and this was done on alternate days until the 15th of April, when he was discharged cured.

In some clinical remarks upon this interesting case, Mr. Holt drew the attention of his pupils to its salient points:—First, as regards the treatment of cases of injury to the perinæum, that an instrument should, if possible, be passed at once, and before any attempt at micturition is made, so as to avoid extravasation into the perinæum, and the probable formation of abscesses. Secondly, that if, as in this case, it was impossible to pass a catheter, the surgeon is bound to incise the perinæum upon a catheter or staff, introduced as far as possible, and having found the other end of the torn urethra, to pass the instrument into the bladder, and retain it until the integrity of the canal is restored. In this case it may be doubted whether the urethra was really torn across, although much injured, since when the man's bladder had most improperly been allowed to become over distended, the urine dribbled away. With regard to the treatment pursued in the hospital, Mr. Holt said he was not at all surprised at having been foiled in his first attempt at catheterisation considering the severity of the case. And when retention occurred, the operation undertaken by Mr. Heath was no doubt the best with the knowledge of the existence

of prostatic calculi. The presence of a large vesical calculus was an unexpected complication which was successfully overcome; but the encrusting of the bladder with phosphatic matter was such a serious event that many surgeons declined to interfere with such deposits. Mr. Heath had, however, removed nearly all with the scoop, and although the mucous membrane must have been severely injured, the patient had scarcely any symptoms for a day or two. The subsequent return of symptoms, Mr. Holt attributed to the presence of the small portions of calculous matter which had eluded observation before, and their extraction gave immediate relief, bringing down the pulse in a remarkable manner. With regard to the after-treatment of the case, Mr. Holt observed that, in consequence of the extreme difficulty which was experienced in getting any instrument into the bladder, he departed from his usual practice and tied the catheter in, but after the withdrawal, even for a day, the contraction immediately recurred, although the catheter was passed more frequently than usual. So he was eventually obliged to pass the dilator immediately the catheter was removed, and split the stricture at once.

This case served to illustrate admirably the result of the operation, as the man has gone down into the country able to take a No. 10 easily, and if the instrument were passed every few months would probably have no further trouble with his urinary organs.

The following case is an example of one of the accidents that attend the passage of a flexible bougie.

Case XX.

Stricture of Eighteen Years' Duration—Calculus around Bougie broken in the Urethra—Operation for its Removal—After Operation for Stricture—Recovery.

George Garland, aged 41, labourer, was admitted into the hospital on the 27th January, 1868, suffering from stricture of the urethra and urinary fistula opening into the perinæum, the former having existed for eighteen years.

He states that fourteen years ago, whilst undergoing gradual dilatation at a provincial infirmary, a bougie was broken in his urethra, and about half of it left remaining. Three days after the accident had occurred an operation was performed for his relief, and a fragment of the bougie, measuring three inches in length, removed. On the following day a piece

about one inch long was ejected whilst he was making water. The perinæal incision readily healed up, and in six weeks after the operation he was enabled to leave the infirmary, passing his urine in a fair stream. A fortnight after he had left, another portion of bougie, about half an inch in length, came away from his urethra. At this time he became sensible that a fragment of it which still remained had been removed from its original position to a point nearer the glans. He was now unable to pass his catheter beyond this, and against it he could distinctly hear the instrument grate.

The stricture accordingly speedily returned, and during the last fourteen years he has had great difficulty in passing his water, and has been subject to occasional, though not very severe or serious, attacks of retention of urine.

About a fortnight previous to his admission into the Westminster Hospital, he first noticed a small "lump" in his perinæum, and a week after a fistulous opening was established in the mesial line, the urine flowing almost entirely through the aperture.

On introducing the catheter an obstruction is met with about five inches from the extremity of the penis, but exploration through the

fistula with a probe fails to give positive evidence of a foreign body being located within the urethra. As Garland, however, persisted in his statement that "there was a piece left behind," Mr. Holt determined to operate.

The patient being placed in the lithotomy position, a grooved staff was introduced as far as the point of obstruction, and an incision made in the central line, but no fragment of bougie could be detected in the urethra; but external to it and on the right side a hard tumour was felt. On cutting down on this a calculus about an inch and a half in length was extracted in three pieces, in the centre of which was a soft black substance, evidently the portion of bougie—the nucleus of the stone.

The stricture was too tight to admit of the passage of a catheter, so oiled lint was introduced into the wound in order that it might be kept open.

February 12th.—Has not passed a good night, though pain has not been very intense. Pulse 84.

13th.—Better night. Pulse 80. Action of bowels has taken place. He has no control over the passage of his urine, and it dribbles from him principally through the incision. Skin hot and dry.

Mist. Efferves., ℥j. 4 bis horis.
Pulv. Ipecac. co. gr. x o. n.

14th.—Slept very well. Pulse 96; weak. Suffered great pain this morning on account of not being able to pass his water. An opiate draught afforded almost instantaneous relief. A quantity of rather offensive pus is discharged from the wound.

15th.—Urine more under control, but only a very small quantity passes through the penis.

21st.—Suffering from a sharp attack of orchitis.

March 12th.—After having made three ineffectual attempts to introduce a catheter, Mr. Holt succeeded to-day in passing a No. 1 (silver). This was retained for nineteen hours.

13th.—No. 2 passed; retained for twenty-four hours.

14th.—No. 3 passed; retained for eight hours.

Mr. Holt now performed immediate dilatation, and afterwards passed a No. 10 catheter.

April 2nd.—The quantity of urine coming through the incision has gradually been diminishing, and to-day for the first time he has made water without any portion of it passing through the perinæal opening.

April 7th.—Passes his water in a full stream, and entirely through the penis. Leaves the

hospital to-day, not having had a single unfavourable symptom since the immediate dilatation was performed.

Case XXI.

Obstinate Stricture—Abscess in the Perinæum—Fistula in Perinæo, &c.

Abbott L——, a pallid, unhealthy-looking man, aged 40, was admitted under Mr. Holt in June, 1863. He stated that for many years he had experienced difficulty in passing his urine, and that four years since he had an attack of retention, which was, however, relieved by the passage of a catheter. Eighteen months since the stream became very much diminished, and he shortly afterwards placed himself under Mr. Wood's care in King's College Hospital. Mr. Wood succeeded in passing a No. 3 catheter upon two occasions, the difficulty being upon each sufficiently great to necessitate the administration of chloroform; in consequence, however, of some business that required his attention, he was compelled to leave the hospital without deriving the full benefit of Mr. Wood's treatment, and until the following April he neglected applying for any advice. At that

time he experienced greater difficulty than ever, and noticed a swelling in the perinæum, and that his urine contained pus.

On admission he informed the House Surgeon that he had not passed water for sixteen hours. He was in great agony, and the House Surgeon endeavoured to pass a catheter for his relief, but not succeeding, he placed him in a warm bath, and prescribed opium, under the influence of which he passed a small quantity of urine. On the following morning, the patient was seen by Mr. Holt, who immediately made an opening into the swelling in the perinæum, which gave exit to about an ounce of pus, and as the incision was made to extend into the urethra, the urine was afterwards freely evacuated through the wound. The patient was in a very low state—partly from his sufferings connected with the retention of urine and partly from bronchitis, from which he had been for some days under treatment. On the following morning he was much relieved; he had passed a quiet night, slept well, and his urine was freely evacuated through the wound in the perinæum. Mr. Holt considering the then unsatisfactory state of the patient, and that the bladder could be emptied, did not deem it advisable to attempt the pas-

sage of a catheter, hoping that as the urine no longer came in contact with the stricture, it would gradually become less irritable, and more amenable to treatment. The patient continued to pass his urine entirely through the wound for the next three weeks, when, as the opening was becoming small, Mr. Holt tried to pass a catheter, but without success; the parts bled freely, but he was not otherwise inconvenienced. Attempts were now continued at various intervals without, however, the catheter reaching the bladder, and upon two occasions retention again ensued, so that the wound in the perinæum was obliged to be re-opened, for although the catheter had latterly passed through the front stricture, it would not reach the bladder. Under these circumstances a director was passed through the perinæal opening into the bladder, and upon this director the point of the catheter was pressed forwards, so that by this means the bladder was eventually reached. The catheter was now tied in, in the hope that the urethra would speedily become sufficiently enlarged to permit the ready entrance of the dilator, but as this did not occur, the dilator, in a few days afterwards, was passed upon the director in the same way that the catheter had been, and the

strictures were immediately split with the No. 10 tube. From that time the patient had no difficulty in voiding his urine, and he shortly left the hospital with his urethra admitting a No. 10 easily.

The surgeon is occasionally consulted in cases where the patient frequently suffers from retention of urine, although a moderately large-sized catheter can be passed. The following two cases are good examples of the benefit derived from at once enlarging the urethra and destroying the source of irritation.

Case XXII.

Captain P——, a patient of Mr. Miller's, of King Street, St. James's, consulted me by that gentleman's advice, in consequence of his continually suffering from retention of urine, which compelled him always daily, and sometimes more frequently, to pass his own No. 7 catheter.

He informed me that some years since he had suffered from stricture, and for which he had been successfully treated, but that latterly, although he could pass his urine in a stream, and easily introduce a No. 7 catheter, yet that daily he had retention of urine, for the re-

moval of which he was compelled to resort to the catheter. He was a very abstemious liver, but had for a long time suffered from chronic rheumatism. Upon examining his urethra, I found no difficulty in introducing a No. 7, but it would not admit a No. 9, the obstruction being situated about the membranous portion of the canal. Believing this to be a case of irritable stricture, not easily dilated, and where spasm was sufficiently strong to cause retention where No. 7 only could be passed, but where probably such would not be the result if No. 12 could enter, I persuaded him to have the operation performed, and on January 29, 1862, without the aid of chloroform, I introduced the dilator, and split the obstruction with the No. 12 tube. A No. 12 catheter replaced the dilator to empty the bladder, after which it was withdrawn. On the following day he informed me he had not suffered from the operation, and that his water had been passed less frequently, and in a full stream. On the 31st, the No. 12 was again introduced without any difficulty, and so the after-treatment was continued on alternate days without any retention, until Feb. 12th, when the urine, being loaded with lithic acid, he found himself unable to relieve the blad-

der without the aid of the catheter, and a No. 11 was easily passed. From this time he continued uninterruptedly well, daily gaining strength, and capable of passing his own instrument without the least difficulty. This gentleman called upon me in July of the present year, and I passed the largest instrument without the slightest hesitation. He informs me he has never suffered from retention since he left London, and that he considers himself in perfect health.

Case XXIII.

Mr. H——, a patient of Mr. Alfred Heales, of Luton, consulted me under similar circumstances, and although in his case a fair-sized instrument could be passed, yet after any excess or undue exertion he was troubled with retention of urine, and was obliged to have recourse to the catheter. This patient remained under my care for a very short time; there was but little difficulty in passing a No. 5, so that I introduced the dilator at once and enlarged the urethra, so that it would at once admit a catheter of the natural size of the canal. There was not the slightest complication or suffering, and he returned to the

country in a fortnight, not having had retention since the operation, and with the urethra so enlarged that it would admit a large-sized catheter. I have since received a letter from Mr. Heales, who says, "I have just seen H——, whose stricture you were good enough to rupture; it is, I think he said, three weeks since his return; he expressed himself as much relieved, and thankful that he has not since had an arrest of urine. To-day I passed No. 10 easily; I have no doubt of the efficacy of the plan of treatment, and I shall have no hesitation in sending you a patient another time."

Were I so disposed I could continue relating cases of extreme interest, and of great gravity, but as they would be a mere multiplication, acknowledging a simple principle, I shall content myself with recording the more interesting example of a most resisting and unyielding stricture in a patient whom Mr. Arnott was kind enough to place under my care.

Case XXIV.

Colonel C——, a very stout, heavy man, about 50 years of age, had suffered from stricture for many years; he had consulted all the celebrated surgeons of the day, and his urethra would now only admit a No. 6 catheter, which was passed with considerable difficulty, and was so tightly grasped as to require considerable force to remove it. The stricture after a time would yield so as to admit a No. 7, and even a No. 8 had been pressed in, but no benefit was derived from this treatment, and he continued to pass water in as small a stream and as frequently after the catheter had been passed as before; in fact, the dilatation plan could not be carried out. I might mention that internal urethrotomy had been previously performed, and that the urethra had been cauterised after the most approved fashion. He had several times suffered from retention of urine, and severe rigors followed almost every attempt to enlarge the diameter of the urethra. The prospect was not a very pleasing one, as all other plans had failed in affording the required relief; and as severe constitutional symptoms

succeeded each passage of a larger instrument than usual, I could not ensure the patient against the probability of their following my operation, although I had, in many instances, found no inconvenience succeeding to the rupture of the stricture, although severe rigors had supervened upon catheterism. On June 28th, 1862, I performed my operation in the presence of Mr. Arnott, who was kind enough to accompany me. Although the dilator could be easily passed into the bladder, I never was compelled to use so much force for the rupture of the stricture, excepting in the case of Capt. T——, who had been operated upon by Mr. Syme. The Colonel bore the operation without a murmur, and a No. 10 catheter was afterwards passed, but very little blood escaped. In the evening he had a violent rigor, accompanied by vomiting, this succeeding to his passing water, which scalded him severely; his skin was hot; pulse 120; and he complained of pain in his head and back. Some saline medicine, with opium, was administered, and in the morning he was more comfortable, as the skin had freely perspired; the stream of urine was not improved, but he had passed it in small quantities. A No. 9 catheter was easily passed, and about 8 oz. of

urine were removed; he remained for the next few days in a very languid state, and as the rigor had been severe, the catheter was not passed until July 3rd, when a No. 10 was attempted; it was firmly grasped, and did not quite enter the bladder. In the evening he had another rigor, for which the same medicine was prescribed; the urine continued to be passed in a small stream, and he was very weak. On the following day he was somewhat better, tonic medicines were now prescribed, and wine fairly administered, and under this treatment he continued steadily to advance, although he suffered from a kind of bastard ague, even when the catheter had not been passed. On July 23rd, another attempt was made with No. 9, which passed readily into the bladder, and was not succeeded by rigor, and on the 25th No. 10 was again passed, but it did not quite enter the bladder, and the attempt was again succeeded by rigor. No further attempt was now made until Aug. 2nd, when a No. 11 passed easily and smoothly into the bladder, and was not in the least degree grasped, when it became necessary to remove it. On the 4th, the same instrument was had recourse to; it entered the bladder, and was not followed by any un-

favourable symptom. He was now taught to pass his own bougie, which he did without difficulty, and in a few days afterwards went to the sea-side to recruit his health. This gentleman has remained perfectly well ever since; he has greatly improved in health, and passes his No. 11 without any difficulty.

To prove that the treatment I advocate is equally applicable in cases of stricture of the female urethra, I will record a case which has been already published by Mr. Curling in the 'Lancet' of June 14th, 1862.

Case XXV.

A Case of Close Stricture of the Urethra in the Female, Cured by Forcible Dilatation.

Ann W——, aged 39, married, was admitted on the 17th of March, 1862. She is a pale, delicate-looking woman, a native of Woolwich, and states that she has been married twenty years and has had two children. She was married eight years before the birth of her first child; the labour was natural, and the child lived. Four years afterwards she gave birth to a second child, but she was this time attended by a midwife, who, she states, was intoxicated at the time, and "forced the labour." She is

under the impression that the midwife ruptured the membranes, and used great violence in extracting the child, causing her to "scream with the agony." There was no one present at the time. The child was born alive, but died soon after its birth, its insteps, hands, and throat having been severely lacerated by the midwife's rough usage. She had immediately afterwards great cutting pain on passing urine, which, she says, contained a large quantity of blood. At the end of three days an abscess formed in the neighbourhood of the urethra, producing almost complete retention. She was confined to her bed for four months, her medical attendant ordering her lotions and medicine, but she refused to have any instrument passed. Soon afterwards she left England, and sailed to the West Indies in company with her husband, where she remained eight years. She continued to have more and more difficulty in passing her urine, which came away in a very fine stream and in small quantities. Her bladder became irritable, and she sometimes had complete retention, which she was in the habit of relieving by hot fomentations, &c. In March, 1862, she was sounded by a surgeon in the country, and sent to Mr. Curling, under the impression that she was suffering from stone in the bladder.

On the 17th of March she was admitted by Mr. Curling, suffering from great difficulty in passing urine, attended with a cutting pain. The urine contained a considerable quantity of mucus, but was acid.

In the ward an examination was made, when the meatus urinarius was found displaced and hidden by several fleshy-looking, projecting bodies; and, owing to the unfavourable light and bad position, no instrument was introduced. A warm bath was ordered, and half a grain of morphia at bed-time, to be followed by castor oil on the next morning.

On the 22nd she was brought into the operating theatre, and examined on the table, when the meatus was found behind an excrescence on the left side. It was extremely small, and the urethra was so contracted that a small probe was with difficulty introduced. The examination was followed by great pain. An enema of gruel, with forty minims of tincture of opium, was administered, and she passed a good night.

On the 2nd of April, as she was rather low, four ounces of wine were added to her ordinary diet.

On the 4th she was again brought into the theatre; chloroform being administered, Holt's

dilator was introduced, and the stricture split by the passage of a middle-sized tube. This was withdrawn, and a short No. 6 elastic gum catheter was passed into the bladder. This was tied in, and remained for four days, an anodyne and a warm bath at night being administered, which gave great relief to the dragging pains of which she then complained.

On the 7th, Mr. Curling introduced No. 9 elastic gum catheter, and next day No. 11 was got in by the House Surgeon; but the day after, as it was causing some distress, it was discontinued for two days.

11th.—She was not so well; had a little fever, with loss of appetite, headache, and sickness. She was ordered a saline effervescing mixture, which stopped the sickness.

Three days after, a No. 9 catheter was ordered to be passed daily. To continue the effervescing mixture, as she was still a little weak and sick, with milk, beef-tea, and light pudding.

The following day she passed a No. 7 catheter for herself, and was better in health.

17th.—Urine a little loaded with mucus, and very acid. Ordered by Mr. Curling twenty grains of bicarbonate of potash, with thirty minims of tincture of henbane, thrice a day.

Next day she said she was much better and the bladder was less irritable.

Being anxious to join her husband, she was discharged on the 19th. She left the hospital considerably relieved, was able to pass her urine in a full stream, and had lost a great deal of her former pain. She promised to continue passing a No. 8 catheter, and expressed herself as much relieved by, and grateful for, the treatment she had received during her stay in the hospital.

The following are some clinical remarks on the case made by Mr. Curling :—

"The urethra of the female, being short, simple, and seldom affected with inflammation, rarely becomes the seat of stricture. A few cases have fallen under my notice. You may know that the worst form of stricture in the male arises from injuries, lacerations, or contusions. In all cases of stricture in the female which I have seen, the disease has arisen from injury of the parts in labour. In this case we have a clear history of a badly-managed labour by a drunken midwife, who used great violence in extracting the child. On voiding urine afterwards the patient passed blood and suffered great pain, and an abscess formed in the neighbourhood, which produced almost complete re-

tention. Difficulty in micturition was experienced for eight years; and when she was admitted into the hospital the urine was passed in a very fine stream, and she was suffering from chronic cystitis. The state of the parts and the displacement of the meatus gave every evidence of laceration and injury at some former period, and only a probe could be passed into the bladder. Some years ago I met with even a worse case of stricture than this, arising from injury in labour twenty-eight years before. The stricture was so small that I failed in getting an instrument into the bladder; and as the woman was suffering from retention, I had to puncture the bladder at the seat of stricture, and drew off from thirty to forty ounces of urine. The stricture was treated afterwards by dilatation. In the case of Ann W——, two methods of treatment presented themselves: by incision and by forcible dilatation. It was impossible to pass any instrument of the size required for making internal incision; and if this were practicable the operation would be attended with the risk of destroying the power of retaining urine. We see this after incising the urethra in the female for the extraction of stone. I determined, therefore, on trying forcible dilatation by Holt's

instrument. My experience of this treatment is very slight; but in cases where it has been employed, the urethra, contrary to my expectations, has borne forcible stretching without injurious results, such as hæmorrhage, infiltration of urine, abscess, or any serious local mischief. In this case, after forcible dilatation, I was enabled in a short time to pass a good-sized instrument into the bladder, and, considering the severity of the stricture, a cure was rapidly accomplished; and as the patient has learnt to pass instruments for herself, we need not be anxious about a return of the disease. There is every reason to expect that she will be permanently cured."

The foregoing cases have been briefly described, and no allusion or comparison has been made to the various kinds of treatment already published. Their perusal must have satisfied the most sceptical that, in every instance where any kind of instrument can be passed into the bladder, the urethra may, by the mechanical effect of the dilator, be immediately enlarged to its natural size; and that while in slight cases this enlargement is effected without suffering, so as to render the inhalation of chloroform unnecessary, yet in

the more severe forms that agent facilitates the operation, and secures a perfect immunity from pain. It is quite true that if the after-treatment is not attended to, the stricture will sooner or later recur, but as the patient by passing his own instrument has the control of the bladder, it can only return as a consequence of culpable neglect. The immunity from accidents having been already proved, the surgeon need have no fear of those serious results which so frequently accompany any cutting operation, and it is no less extraordinary than true that whereas rigors ordinarily supervene after rapid dilatation, they form the exception where the stricture has been fairly split.

It may be asked, what advantages accrue from the performance of the operation, when it is necessary that the after-treatment should be continued for a variable period of time: and why the ordinary plan of dilatation should be abandoned? My reply is—1st, that by its performance a large-sized catheter can be immediately passed, and the patient be speedily taught to use his own instrument; 2nd, that the patient avoids all the suffering incidental to gradual dilatation, and the frequent disappointment of not being enabled to increase the sizes of the instrument; 3rdly, that it secures

all the advantages that can accrue from the performance of any operation, and with much less danger to the patient than by any cutting operation; and, lastly, that the period of recovery is shorter, it does not necessitate confinement to bed, and the patient is saved the expense of being constantly under the hands of his surgeon.

These observations apply to those cases where dilatation can be continued in the ordinary manner; but all practical surgeons know that there are a large number of cases where dilatation is ineffectual in advancing beyond a certain gauge; and here some operation must be performed, if the patient is not to continue a surgical annuity.

I am fully aware that in advocating a plan of treatment by which the stricture is split or torn, prejudices have to be overcome, from the fears which naturally arise as to the extent of the rupture, and the consequences, not only to the urethra, but also to the immediately investing structures. What may be the precise limit of this rupture in the living body I have not as yet had an opportunity of ascertaining, the treatment having been attended hitherto with unvarying success; and when already 640 cases have been operated upon by myself,

in addition to those where the operation has been undertaken by other surgeons, in all of which the treatment has been most efficacious, it is not too much to hope that the danger must be very limited, when compared with any of the cutting operations.

Since the above was written, a very interesting essay, for the Fellowship of the Royal College of Surgeons by examination, "On Organic Stricture of the Urethra, and its Treatment by Holt's Method," has been published by Dr. Miller, of Edinburgh, in which he records the *post-mortem* appearances of the urethra of a patient upon whom he operated nineteen days prior to his death, occasioned by obstruction of the bowels; and after detailing the appearance of the intestine, he says: "The bladder and urethra were removed. In so doing, an abscess, probably connected with Cowper's glands, and lying close upon the membranous portion of the urethra, was opened into. The bladder was hypertrophied, and the mucous membrane thickened, as is usual in cases of long-standing stricture. *The urethra, on being cut open, was without a trace of rupture or cicatrix* (*vide* Plate). The membranous portion was attenuated, owing to the abscess formerly men-

* The italics are my own.

tioned. A preparation was made of the bladder and urethra, which I had the honour of showing before the Medico-Chirurgical Society in December last." And another very remarkable case was about the same time recorded by Dr. M'Donnell, of Dublin, in his paper "On the Treatment of Stricture by the Stricture Dilator," of a patient who died from cholera, and in whom the immediate operation had been performed fifteen days prior to his death. Dr. M'Donnell removed the bladder and urethra, and they were examined carefully by Dr. Cruise, Mr. William Stokes, and himself, soon after removal. The appearance, however, at that time was not materially different from what the members had now an opportunity of seeing. A No. 9 catheter could readily be passed along the urethra. Except for the hypertrophied condition of the muscular coat of the bladder, and the dilated state of the portion of the urethra behind where the stricture *had been, there was no other sign of the disease having existed.*

Dr. Millar has also referred to three cases, published in my "Opinions and Statistics on the Immediate Treatment," where the parts were examined shortly after death, and where

the mucous membrane was found to be entire, and arguing upon these facts, and the examination of numerous preparations, he infers that in most cases the mucous membrane is not *torn at all*, but that the deposit of lymph in the submucous tissue around the canal *is alone ruptured*, and as a further confirmation of his views, he says "the mucous membrane is generally free from pathological change, as I found it in forty-one out of fifty-four preparations in the Museum of the Royal College of Surgeons of Edinburgh, several of them having been examined microscopically; the membrane is also frequently thrown into folds, or rugæ, by the constricting power apparently of the *submucous deposit*, as I found in nineteen of the forty-one preparations above mentioned. *In four cases only* of the fifty-four was there any apparent thickening or alteration of the mucous membrane. Thus, the mucous membrane being considerably elastic (probably more so in the living than dead subject), and generally healthy, yields during the operation, and so escapes injury, the abnormal tissue alone being ruptured." Now, if this should be so, it strikes at the root of all the ordinary treatment for stricture, and explains why dilatation, potassa fusa, internal or external urethrotomy,

or the retention of a catheter, fail to give more than temporary relief.

Dilatation can only exert its influence so long as the part is kept stretched. Potassa fusa, to be of benefit, can but act in destroying irritability, and so permit a catheter or bougie to be passed, for if it produces a slough, the mucous membrane would, when healed, contract worse than before. Internal urethrotomy, to be of permanent advantage, must cut through the submucous deposit, and so divide the mucous membrane—a dangerous operation, as without the retention of a catheter, infiltration of urine would ensue. External, or perinæal section, is more dangerous than all, but approximates nearer what should be done than anything else, and the retention of a catheter is simply time wasted, as the submucous deposit not being absorbed or removed, but simply stretched, the contraction, upon the removal of the catheter, at once returns. In the *Medical Times* of July, 1867, Mr. Le Gros Clark expresses a fear, that after the stricture had been split, the cicatrix was more likely to contract, and offer greater obstacle to the passage of the urine; but the cases already related, and the examinations with the endoscope made by Dr. Cruize during life, entirely

annul this fear; and in the cases examined *post-mortem*, not a trace of stricture, cicatrix or granular surface could be found. That mucous membrane is capable of rapid dilatation to an extraordinary extent is well shown in the following case:—

Lord ——— had been for some years under my care, suffering from a small bladder. He was not the subject of stricture, or apparently any disease of the bladder, but it would not hold more than from two to three ounces. No greater quantity could be injected even when he was under the influence of opium; and if belladonna was given, he suffered pain, and the urine was obliged to be removed with the catheter. Unfortunately, he met with an accident, by which he was rendered insensible, and the urine accumulated until I saw him, when a pint and-a-half was removed. Here, for twenty-five years or more, the bladder would not hold more than from two to three ounces of urine, and yet, when utter obliviousness followed an injury to the head, the bladder was so distended as to hold a pint and-a-half The urine being now regularly removed, the *post-mortem* revealed nothing but a small and otherwise healthy bladder—a remarkable instance of the elasticity of mucous membrane.

The few exceptional instances,—viz., four in fifty-four preparations where the mucous membrane was altered, in its structure goes farther than anything else to prove Dr. Millar's view, and this view is borne out by the results of my operation, although from inability to ascertain the exact condition of the parts, the proper explanation has not been previously given. I by practical experience know the perfect safety of the immediate plan. Dr. Millar has confirmed this by further pathological research, and his explanation confirms what I have invariably stated—viz., if the dilator is not permitted to deviate from the urethra, the operation is perfectly safe in every case where it should be performed; and the mucous membrane not being ruptured, infiltration of urine cannot take place. My theory was that the mucous membrane was split, and that the submucous deposit prevented infiltration, but further experience demonstrates that the mucous membrane dilates, and the sub-mucous deposit is alone split, and so it enhances the value of the operation over every other, because at present there is no other plan by which such results can be obtained. The four exceptions referred to would also explain the reason why, in some instances, the operation is not followed by that amount of

benefit which it is in others, and where the stricture afterwards contracts with greater or less rapidity. No doubt in these cases the mucous membrane is altered in its integrity, and somewhat resembling a piece of india-rubber, it permits itself to be stretched, but speedily re-contracts. The sub-mucous deposit is very trifling, and the contractile mucous membrane is the main cause of the obstruction. With the view of distending the urethra to the utmost, the late Sir Benjamin Brodie and the late Mr. Guthrie used to dilate the stricture until it would admit a 14 or 15 bougie; and in more recent times Sir Henry Thompson brought under the notice of the profession an instrument whereby *the stricture* could be dilated to No. 17, while *the orifice* was not enlarged beyond its ordinary size; but in neither instances can such sizes be maintained without the constant passage of the bougie. And this being necessary, only such a size can be had recourse to as will pass the orifice. Nothing can more forcibly explain the re-contraction of a stricture after dilatation than the fact, that where the stricture has been stretched to No. 17, and the orifice will only admit a No. 12, a No. 12 is to be tied in to prevent the stricture contracting beyond that size, and

that the No. 12 is to be afterwards passed to keep the stricture open. The pathological fact now brought more prominently before the profession by Dr. Millar, that in the very large majority of cases of stricture, the mucous membrane is intact, shows the utter uselessness of stretching it beyond its natural size; but it may be said, by doing this you also stretch the sub-mucous deposit, and so enlarge the whole canal. Doubtless this is so; but if you cannot keep it stretched, the dilatation is of but transitory benefit. To stretch a tendon in club-foot requires continued extension for months; to stretch the cicatrix of a burn requires the same prolonged treatment; but neither the urethra nor the health of the patient will bear this, and so we are compelled to have recourse to other means. This is again proved in the cases where a catheter has been retained. Even in these cases, although the catheter may have been worn for weeks, and the largest size has been attained, the stricture speedily re-contracts after the instrument has been removed, and the patient is soon made aware that, after all the time he has devoted to his cure, he recedes from 10 to 9, to 8, to 7, to 5, and so on, until the stricture contracts to what

it was at the time the treatment was commenced. When it is remembered that 742 cases have been actually collected up to 1865, irrespective of those operated upon by myself, and that in no single instance has there been infiltration of urine, it certainly goes far to presume that the mucous membrane is not torn. And if this is admitted, then it points to the necessity of always adopting the principle I had enunciated of *thrusting the tube with the greatest rapidity* between the blades, so that the obstruction may be thoroughly split. The non-attention to this part of the operation has doubtless ended in failure in the hands of a timid surgeon, *for it is only by splitting the sub-mucous* deposit that any permanent good can be effected. In a case of dense obstruction situated near the glans penis, Mr. William Adams subcutaneously divided the effused lymph, and the recovery was perfect, the urethra admitting a large-sized instrument immediately afterwards. The consideration of the present subject gives rise to the idea that if this sub-mucoid deposit were more thoroughly divided, the return of contraction would be much less likely. It may therefore become a question whether a larger tube than No. 12 might be used, and relying upon the elasti-

city of the mucous membrane, rend the deposit still further than has been heretofore done.

One of the most vital points of interest to the patient is the greater or less certainty that after the Immediate Plan the stricture will not so re-contract as to necessitate any further operation. Dr. M'Donnell, in his capacity of Surgeon to the Mountjoy Convict Prison, has been enabled to carefully watch patients upon whom he has operated for a series of years, and he writes ;—"Although in these pages I mention only those cases which I was able to follow, owing to their being kept within prison walls for some years, yet I may say that besides these I have operated on a considerable number of others both in hospital and private practice. Yet *I have never met with any untoward result.* In two cases only did any considerable constitutional disturbance supervene, and this subsided after three or four days. When I compare this with the ill effects I have myself witnessed, as well in instances of internal as external section of strictures, and even following too hasty dilatation with bougies, it is, I must confess, *perfectly astonishing;* in short, were it not for the facts staring us in the face, *one could*

not believe that the forcible splitting of an old stricture could do so much good and so little harm. It proves how essentially tentative everything in surgery is."

Dr. M'Donnell then gives a Table of twelve cases at various intervals of time since the operation, and says :—"Now on looking on this Table, the first question one is inclined to ask is, is it certain that stricture really existed in each of these cases?" "In all the foregoing cases I had recourse to an expedient which I conceive leaves no doubt that stricture actually did exist. I passed a double-length catgut bougie made with a gum elastic catheter to slide over it, an instrument devised, I believe, by the late Dr. Hutton, and much used by that eminent surgeon. The catgut bougie (of small size) is first introduced into the bladder ; being double the usual length, a long piece projects from the urethra ; on this a catheter, open at each end, is slid ; the end of the catgut being held, the catheter is slipped on, and is thus conducted along the urethra ; if it comes to a dead stop at any point, it there has met with a stricture too close for it to pass. The narrowing permits the catgut to get through it ; to the catheter it says no. According to the size of the catheter we know

the size of the stricture. No lacuna, fold of membrane, false passage, or enlargement of the prostate can now deceive us. The conducting bougie would certainly steer the catheter past any such obstructions. I think this method may be considered a crucial test for the existence of stricture, and it was applied in each of the cases mentioned in the above table. I am then, I believe, justified in stating that stricture existed in every one of these patients, as in no one of them could I at first slip a No. 2 catheter along the conducting bougie into the bladder." I agree with Dr. M'Donnell that he has taken every means to satisfy others as to the genuine character of his cases, and I apprehend there is no one prepared to dispute their authenticity.

My own experience confirms Dr. M'Donnell, and I have no hesitation in affirming, that with the commonest care the stricture may (after having been once thoroughly split) be prevented contracting, and the same sized instrument as was used at the operation be afterwards introduced. If, however, the case is utterly neglected, the stricture will return, and more especially so where there has been alteration of structure in the mucous membrane; but even here the contraction can be immediately

overcome by simply passing the dilator, and in *these instances* gently passing the large tube between the blades. The part is immediately enlarged, and may then be maintained so by the occasional passage of a bougie.

What then are the advantages of incising the urethra in those obstinate forms of stricture which necessitate some operation? Is it a more simple operation, less dangerous, and possessing any peculiar advantages in reference to a recurrence of the disease? I unhesitatingly state that there are no such advantages, but that, on the contrary, the operation is more difficult, and requires considerable experience for its performance. The operator in only a very limited number of cases, can insure the limitation of his incision to the strictured part, and for its performance it is necessary that some instrument should reach the bladder. Do the records of these operations give the degree of success which has been obtained by the operation I advocate: and setting aside the complications of hæmorrhage, infiltration of urine, abscess, &c., which so very frequently ensue, do they offer any better chance of permanent cure than the division of stricture by rupture? Is not their after-treatment more tedious, the patient being con-

fined to bed with a retained catheter until the greater portion of the wound has healed; and when this has united, do they not necessitate the rigid enforcement of the after-passage of the catheter, to ensure a prevention of the contraction?

The only difference between an incised wound and a rent, is that the former, if the edges are left approximated, heals much more quickly than the latter, and so more speedily induces a recurrence of the contraction. It is by stretching the uniting medium of either incision or rent that the cure is to be accomplished, just in the same manner as the orthopædic surgeon extends the soft union of a divided tendon.

Mr. Syme, with that ingenuity and surgical skill which have so long placed him in the highest rank of our profession, devoted his attention to the treatment of this most important disease, and devised a plan which, at the time of its publication, offered in the more obstinate forms of stricture, the best chances of success, more especially when the contraction was situated in front of the anus. But even in the hands of this scientific surgeon, the operation has not been without its attendant evil consequences, and in those of surgeons

of less experience, has frequently terminated fatally.

Knowing the dangers incidental to perineal section, various surgeons, both at home and abroad, have endeavoured to substitute an internal for an external incision, and various instruments have been invented for the purpose of incising the stricture from within; but with all there is the serious difficulty of not knowing with accuracy the exact structure which is being divided, and as the cutting portion of the instrument is usually *set* to divide a stricture, of the extent of which the surgeon is ignorant, it has been frequently found to cut either beyond the thickness of the stricture, or to have divided a portion of the urethra, either in front of or behind the obstruction; hence, the frequent accompaniments of serious hæmorrhage, infiltration of urine, and abscess.

To accomplish either operation, it is necessary that some instrument should pass through the stricture; and when that can be effected, I maintain that no cutting operation is either necessary or justifiable, and simply from the fact, that where any instrument can be passed, there the dilator can enter, and by the introduction of the tube (which, with the dilator, should only represent the natural diameter of

the urethra), we can split or tear that which is the seat of obstruction ; and as far as I have yet had an opportunity of judging, the obstruction only. There is also another material advantage which attaches to splitting in preference to cutting—viz., that the surgeon is not obliged to keep any instrument in the bladder, but the patient passes his urine in a natural manner ever afterwards, the catheter being introduced at first on alternate days, and afterwards at longer intervals, until the canal is so far widened that the occasional passage of the bougie will maintain its calibre. While, however, I am unquestionably of opinion, from the large number of cases that I have operated upon, that the operation by rupture is the most feasible, the easiest to perform, and the least dangerous, I do not place it before the profession as a means of cure, unless the after-passage of the bougie is faithfully carried out. We know not at present, of any means, by which a stricture can be cured without such after-treatment, any more than the orthopædic surgeon knows of any means of curing deformities without the application of some extending apparatus after a tendon has been divided. Our extending, or rather distending, means consists in the introduction of the

catheter, or sound, and I care not whether the operation be by incision or splitting, the disease will recur if the contracted part of the canal is not kept dilated for a given time, such period varying with the nature and number of the strictures, the irritability of the patient, and the complications of false passage, fistulæ in perinæo, &c., &c., which may exist.

The advocates for internal incision affirm, that inasmuch as the knife is applied solely to that portion of the urethra which constitutes the obstruction, they divide the stricture only ; I must, however, express my doubt as to the accuracy of this statement, and record my belief that it is quite impossible to determine, at six or seven inches from the meatus, which side of the urethra lymph has been effused ; the sound, or cutting instrument, is firmly grasped, and unless the seat of thickening, or deposit, is always the same, it will be quite impossible, from the sensation conveyed to the surgeon, to know which part to incise.

The numerous preparations in the different museums prove that, although the under part of the urethra may be the most frequently diseased, yet that the exceptions are so numerous as practically to render that fact of no value, and that where the obstruction is of the

obstinate character met with in the cases I have detailed, the thickening may be taken to be tolerably circumferential.

Suppose it were otherwise, and that the upper segment of the urethra were not involved, what should prevent the onward passage of a catheter when it has entered the contraction, since the upper part, if normal, would certainly yield, and permit of its passing to the bladder? The truth is, we have no security that, in the employment of a cutting instrument, our incisions are confined to the stricture alone, or even that the weakest part of the urethra may not be divided, and thus give rise to infiltration of urine and abscess, an occurrence by no means unfrequent where such means are employed. Hitherto, any treatment beyond ordinary dilatation has been considered applicable only to cases where the most severe complications are met with, and where the difficulties have been such as to compel the patient to place himself under the care of a surgeon who has great experience in the treatment of such cases; but the ordinary circumstances of cases, as they are usually presented to us, offer no obstacle to their immediate subjection to the practice I advocate. As a general rule, a patient seeks professional aid

when a No. 3 or No. 4 can be introduced; and here, no matter what may be the exact pathological change, the stricture may be immediately split, the catheter being afterwards passed upon three or four occasions by the surgeon, when the further treatment of the case may usually be transferred to the patient, who is now capable of passing his own instrument. The three following cases will best illustrate this:

J. W., aged 45, consulted me in January, 1858, in consequence of difficulty in micturition, the result of stricture at about six inches from the meatus. His urethra would admit a No. 3, but it was exceedingly tight; and as he was desirous of returning to the country, I advised that the stricture should be immediately split. The dilator was at once passed, and the stricture split, so that a No. 12 catheter could be introduced into the bladder. The urine having been withdrawn, the catheter was removed, and he was directed to return home, and remain quiet the same afternoon. He again presented himself on the second day after the operation, stating that he had no constitutional disturbance, and that the stream of urine was improved. A No. 12 catheter was again introduced, and without any drawback; this was repeated on three occasions,

when, as he had been previously in the habit of passing a No. 3, he had no difficulty in introducing a No 12, and he returned to the country. I have had frequent opportunities of seeing this gentleman since, but he has never required to consult me again respecting his stricture.

Mr. H., a gentleman of colour, consulted me for stricture, situated at the membranous portion of the urethra. He had suffered from difficult micturition for about eighteen years; there were, however, no complications, and his stricture would admit a No. 3, which for some years he had been in the habit of passing. As he was a nervous person, he was placed under the influence of chloroform, when the dilator was introduced, and the stricture split with the No. 12 tube. The No. 12 catheter was then introduced, and the urine removed. There was scarcely any bleeding; he never had a bad symptom, or took medicine, and in a fortnight returned to Australia, passing his No. 12 catheter, which, with others, in case of fresh cause of difficulty, he procured from Messrs. Whicker and Blaize.

Mr. B., aged 65, residing at Hampstead, consulted me for stricture of thirty years' duration. He had been occasionally the subject of

retention of urine, which was usually relieved by warm baths and opium. When I first saw him, in 1858, I could only introduce No. 3, and as he was in great dread of any operation, I consented to dilate the stricture in the ordinary manner. By the gradual process I eventually arrived at No. 8, when, from circumstances, he was compelled to discontinue his attendance; and upon his again consulting me, in the latter part of 1859, the stricture had so far returned that I was compelled to begin *de novo*. This time I persuaded him to have the stricture split, and, without the aid of chloroform the dilator was passed, and the stricture split to No. 13, his urethra being sufficiently capacious to take that size. Although an old man for his age, he never had a bad symptom, and ceased to continue under my care after my teaching him to pass his large-sized catheter, which he accomplished in about three weeks.

Is there, then, any special class of strictures where the operation by rupture is inadmissible either from the situation, kind, and number of strictures, or from other complications? I believe not; but that there is a large number where any cutting operation must be attended with considerable danger, is now well known.

Let us, for example, take a class of cases frequently met with, where fistulæ in perinæo, or elsewhere, exist, combined with great hypertrophy of all the tissues in the immediate contiguity of the stricture, and in which considerable time must be expended, and much skill employed before any instrument can be passed into the bladder. Here, to cut into a small groove requires great coolness, determination, and experience; and even when the operator is successful in reaching the groove, and so far dividing the obstruction as to admit a large catheter, the patient is confined to bed for many weeks before union will take place sufficiently to allow of the withdrawal of the instrument. And, again, what is the advantage of dividing a mass of hypertrophied tissue which does not encroach upon the canal, but necessarily intervenes between the knife and the urethra? If the diameter of the urethra can be enlarged to the same extent without such a proceeding, and a free outlet afforded for the urine, the hypertrophy will diminish, and the parts will eventually be restored to their original integrity.

Mr. M. S. H., a gentleman of colour, came from Sierra Leone to have his operation performed. He had been the subject of stricture

for many years, and had suffered from frequent attacks of retention of urine, on the last of which occasions the urethra gave way, and the urine being infiltrated into the areolar tissue of the penis, scrotum, and perinæum, these parts became one dense hypertrophied mass, having three fistulous communications with the urethra, through which the greater part of the urine was passed.

Upon examination, I found the scrotum and perinæum in one dense, thickened mass, about the size of a large cricket-ball, and the prepuce was of such a size as to overlap the glands, and entirely prevent the orifice of the urethra being recognised; the penis was also greatly hypertrophied. Having been placed under the influence of chloroform by Mr. Clover, I removed about three inches of the dense mass of prepuce, so as to expose the glans; and some time afterwards, having by great perseverance passed a small catheter into the bladder, he was again put under chloroform, and the strictures split, a No. 10 catheter being afterwards readily passed. The scrotum and penis now very gradually subsided, the fistulous openings in the perinæum healed up, and he was enabled to pass his water in a fair stream.

Important business requiring his return to Sierra Leone, he left London without the after-treatment having been so long prolonged as to ensure no future contraction; his urethra would, however, admit a No. 10, and the urine was passed in a fair stream; his frequency was much less, and his health entirely re-established.

But let me refer to another class, where three or more strictures of varying density exist at different parts of the canal. Is the urethra to be laid open from end to end, or can the three obstructions be divided by internal incision at one and the same operation? I have seen these operations performed by the best surgeons in London, where no possible objection could be urged against their anatomical knowledge, their surgical experience, or their operative dexterity under the most trying circumstances; and I regret to say that they have not been without a fatal issue. No doubt it looks more surgical to place a patient in the position of lithotomy, and undertake a difficult piece of dissection in his perinæum, than to simply introduce an instrument, and pass a large tube, as it were, blindly between its blades, but the results of such cases warrant me in doubting the wisdom of such a proceeding, when the

same result can be attained in another manner without difficulty or danger.

Hitherto I have only considered the applicability of the dilator, so far as rupturing or splitting the stricture is concerned, but it is equally efficacious where dilatation is desired, and possesses an advantage over every kind of bougie or sound in its power of dilating a stricture to any required extent without being withdrawn. All practical surgeons know that having, for instance, had some difficulty in passing a No. 1, it is frequently impossible to introduce a No. 2 at the same visit, whereas, having once introduced the dilator, its diameter can be increased to any extent the Surgeon may desire ; for this purpose it is not necessary that consecutive tubes should be passed, as by introducing at once a No. 8 or No. 9, and very gently pressing the tube onwards between the blades, they become separated to a considerable distance from the point of the tube, as is excellently shown in Figure 1 (page 4). By this means (which, however, occupies some little time), the stricture being acted upon from within, a greater amount of dilatation can be effected at one visit, and with much less pain to the patient than by passing consecutive bougies, which irritate the urethra, and owing

to the abrupt increase of size, sometimes will not enter the stricture at all. If, in adopting the gradually dilating plan, the tube is very slowly passed, the pain will be trifling, and it will entirely cease, in the majority of instances, in a minute or two after the progress of the tube is discontinued. I cannot conceive any instrument more fitting, where gradual dilatation is desired; the blades can be expanded with the greatest nicety, in entire obedience to the desire of the surgeon, and the feelings of the patient, and as the dilatation is effected from within outwards, its force is expended in the most advantageous direction.

But, although dilatation may be employed where time is no object, and where the stricture is of a yielding character, it is utterly incapable of effecting what may be accomplished by passing the large tube at once, and splitting the stricture; the increased diameter being maintained by the after-passage of bougies. The rapidity with which the case will terminate, so far as only to require the passage of a bougie twice or thrice in the course of the year, will depend upon the number of strictures, and the irritability of the patient, more than it will upon their density. In some cases, although great force is required

to split the obstruction, the urethra is to a certain extent insensible, and bears the after-passage of the bougie without the least manifestation of pain, whilst in others, more especially where there have been three or more impediments and the urethra is very irritable, it is necessary to recede a size or two, owing to the spasms being so great during the introduction of the larger instrument, as to cause suffering.

I have lately had a marked example of this in an artilleryman, sent to me by my friend, Dr. Gallway, Surgeon-major of the Royal Artillery. The patient had been the subject of stricture about seven years; he had been through the Crimean war, and an inmate of the military hospital, more or less, ever since his return. Very many and long-continued attempts were made to get a catheter into his bladder without success, and Dr. Gallway requested me to meet him in consultation upon the case. I did so, but was equally unsuccessful in passing a catheter. I therefore requested Dr. Gallway to allow him to be admitted into the Westminster Hospital, to which he consented, and after several trials, I at last succeeded in passing No. 1 through four obstructions into the bladder. As the patient was excessively nervous

and irritable, I delayed splitting the stricture until No. 2 was attained, when the stricture was split with the No. 10 tube, and a No. 10 catheter immediately passed: he did not suffer from the operation in the slightest degree, and his urine was passed in an improved stream. On the second day from the operation, I attempted to pass the No. 10, but the spasm was so persistent that I preferred having recourse to No. 8 rather than give him pain; and I have been up to the present, now three weeks after the operation, content with that size, which passes with great ease, but still excites spasm. I have no question that in a little time No. 10 may be again used. The urethra must necessarily remain sore under such circumstances, and thus excites an amount of spasm which, by grasping the catheter, adds to the patient's suffering.

Mr. W. consulted me in November, 1866, having suffered from stricture for twenty years. He stated that upon several occasions he had had retention of urine, that his water was ordinarily passed in a very small stream, and that he was obliged to strain violently to relieve the bladder. The urine was somewhat ammoniacal, and as this is frequently met with, I did not attach much importance to it. He appeared in tolerable health, and beyond the

difficulty in micturition had not suffered from any special ailment. A No. 2 catheter could be passed with moderate ease, and the stricture was split in the ordinary manner. Although every precaution was taken with regard to removing the urine by the catheter, yet he had a severe rigor a few hours after the operation. Being a large corpulent man the rigor greatly exhausted him. Quinine and opium were administered, but they failed to control the shivering, and although he recovered sufficiently to be removed to the sofa, yet it was clear there was something further than the operation that kept up the intermittent attack. He continued better and worse for a period of three weeks; when the rigor increased in frequency, his exhaustion was greater, and a month from the operation he died. The *post-mortem* revealed most extensive disease of both kidneys; the right one was a mere shell, and the bladder was greatly hypertrophied, and its mucous lining covered with calcareous deposit. Had I fortunately, as I now always do, examined the urine before operating I should have declined to interfere. Shortly after the foregoing case, I was consulted by a gentleman from Liverpool, for a very aggravated case of stricture, and previous to operating I examined his urine,

which gave such unmistakeable signs of Bright's disease that I declined to operate. This patient returned home, and his relation informed me he died in three weeks, the kidneys being almost entirely disorganised.

—— was sent to the Hospital from Wales, suffering from obstinate stricture. He had been under treatment for many months prior to coming to London, but no one had succeeded in passing any instrument into his bladder. The patient stated that for some years he had experienced great difficulty in micturating; the stream was small, and he was compelled to exercise considerable muscular exertion to relieve himself. The urine was loaded with mucus and was highly ammoniacal. After several fruitless trials, I succeeded in passing a catheter into the bladder, but in doing so I became aware of the existence of more than one false passage; the neck of the bladder was also exquisitely tender. On the following day the dilator was passed and the stricture was split, and as there had been such extreme difficulty in the general treatment, a gum elastic catheter was retained. For three days the patient progressed favourably, but at the expiration of that time he had violent rigors, profuse perspiration, and subsequent he became delirious and died from

pyæmia ten days after the operation had been performed. The *post-mortem* examination revealed an abscess of the prostate, with false passage through the neck of the bladder. There was no rupture of the urethra where the stricture had been.

The two foregoing cases represent those in which there is danger in performing any operation. In the first there was extensive disease of the kidneys in addition to that which existed in the bladder, and in the last the patient died from pyæmia, the result of an abscess at the neck of the bladder. These fatal results have had their attendant good inasmuch as they show the necessity of always examining the urine prior to operating; and also that where there is difficulty about the neck of the bladder, that the finger should be always passed into the rectum so as to ensure the point of the dilator not deviating from the normal channel.

In three or four instances, when the induration has been excessive, and where the after-treatment has been entirely neglected, I have found it necessary to perform the operation a second time, and here I have retained a catheter in the bladder after the obstruction has been again ruptured; and certainly, in these

cases, by keeping the divided surfaces thoroughly asunder, it answered the purpose remarkably well, for there was never any difficulty in passing a bougie afterwards. The only other instances where I have retained a catheter has been where the patient, prior to the operation, has had frequent rigors; here with a view to prevent the urine coming in contact with the distended stricture, a catheter has been left in, which, if no urine escapes by the side, has always prevented shivering.

In my later cases I have adopted the plan advocated by Dr. Johnson in his paper on rigors—viz., to administer chloroform immediately the rigor commences, and so far as I have at present seen, it succeeds in immediately arresting the attack, and usually prevents its recurrence, a great boon to the patient, as it is not succeeded by the languor and debility that follow a true rigor.

In conclusion I may add, that in advocating the treatment of stricture by rupture, I claim simply that credit which attaches to the publication of a series of interesting cases (examples of many others) which have been subjected to this novel treatment. That the principle upon which the instrument is constructed is as old

as the hills, and that the power of the wedge has been known as long as the simplest rules of mechanics have been taught, I freely admit, but I have yet to learn that that principle has been heretofore applied to the treatment of stricture of the urethra in the manner detailed above, and with such highly satisfactory results.

Shortly before the publication of my first edition, I had an opportunity of splitting a dense stricture *after death*, and the parts were immediately removed by my friend Mr. Christopher Heath, when the examination showed that the mucous membrane was split, the rent being limited to the extent of the stricture. Having, however, now more extended experience respecting the condition of the urethra after the operation by rupture performed during life, it may be fairly assumed that the result upon the dead body differs from that met with in the living, for after *rigor mortis* has been fairly established, the tissues are less yielding than during life, and the mucous membrane in a bad case of stricture, with considerable induration, might be split on the dead when it would yield, and be dilated in the living; therefore the above case may be accepted with considerable hesitation as evidence of rupture in the living.

That the superficial vessels are ruptured is clear, because there is always more or less bleeding; but as the same result occurs in the passage of a catheter, it must be considered of very little moment.

To Mr. Rawdon Macnamara I am indebted for the introduction of the dilator into the Meath Hospital; and to prove that success is not attributable to any facility I may possess in introducing the instrument and treating the cases, I will relate three most interesting instances that have come under that gentleman's professional care, and were published by him in a pamphlet entitled "On the Treatment of Stricture by the Immediate Plan." Mr. Macnamara, in his preface, says, "The more extended becomes my experience of this plan of treatment, the more convinced am I of its adaptability to almost every possible phase of this most troublesome disease, and the more satisfied of its great superiority over every other method heretofore suggested for its relief. In the following pages I have dwelt on its simplicity, facility, security, and immunity from

pain, hæmorrhage, and the varied sequelæ attendant on our other methods of treating stricture; here it but remains for me to repeat these assertions in a more emphatic manner. Every other day's experience of the 'Immediate Plan' serves but still more to assure me that it is one of the greatest improvements in modern surgery."

In page 9, he says, "The first case on which the plan of forcible dilatation, so far as I am aware, was employed in this city, was that of M. E., aged 60. This man had been repeatedly under treatment for stricture of the urethra, and had been subjected to a false passage. He came into the Meath Hospital in the latter end of April, under Mr. Collis's care. After some days we were able to introduce Mr. Holt's instrument; the stricture was burst on the 2nd of May, the patient went out on the 10th of the same month, and up to the present moment this individual is able to pass water in a full stream, and to admit of the introduction of a No. 10 catheter, and this without one single untoward symptom, from the period of the operation to that of his discharge."

The second case is one where a false passage had been previously made, and is thus re-

corded :—"The case of A. B., aged 50, admitted into the Meath Hospital, September 10th of the present year, was a most interesting one. He had long been subject to stricture, for the relief of which he had been treated by several surgeons on the plan of gradual dilatation. The largest sized instrument, however, that any of them ever succeeded in getting in was No. 4 ; and on the last occasion, in which an effort had been made to introduce an instrument, considerable difficulty was experienced, and a false passage was made, attended, as he states, with the loss of a considerable quantity of blood. After a great deal of trouble, I was enabled to get the dilator past the false passage into the bladder, split the stricture, introduce a No. 8 catheter, and empty the bladder ; the hæmorrhage was of the most trifling character, scarcely a drop of blood having been lost ; and as to the pain, he exhibited so little concern, that I thought he had not felt it, and it was only in reply to my question on the subject that he expressed himself as having felt what had been done to him. This operation was performed on the 12th of September ; that night he had rigors, but of a very slight nature. Next day, and ever since, he was as if he had undergone no operation, and I now experienced

no difficulty in passing a No. 9 catheter; and, indeed, so far as his stricture is concerned, he might have been discharged cured the day but one after Mr. Holt's instrument had been used. He still, however, remains in the Hospital for the treatment of quite another disease having no connexion whatever with the stricture."

The following case is one of great importance, both as to the gravity of the lesions, and in consequence of the manœuvre employed, by which the dilator was introduced into the bladder.

R. T., aged 57, admitted into Meath Hospital in September, suffering from the effects of stricture of the urethra in three different situations, the most anterior being the tensest stricture it has ever been my lot to feel. This patient was under my friend Mr. Philip Crampton Smyly's care, to whose courtesy I am indebted for the liberty to make mention of it on the present occasion. This man had been on three different occasions operated on by different surgeons for the relief of his stricture, by external incision. He now is in a most deplorable state, Mr. Smyly with difficulty passing the smallest size instrument. On the 17th

of September Mr. Smyly proceeded to put into operation the "Immediate Plan," and after prolonged manipulation, failed in getting the instrument more than through the most exterior of the three strictures, when its further progress was arrested, not by the distant strictures, but by the tension of the anterior stricture, which could be distinctly felt tightly pressing the instrument, and completely impeding its further onward progress. Nor was I more fortunate in my endeavours to introduce it further, and the operation should have been abandoned, had we not, on consultation, agreed to burst this stricture, and then to proceed with the further steps of the operation, which Mr. Smyly accordingly carried into effect: he introduced the stilette, burst completely the anterior stricture, withdrew the stilette, closed again the blades of the dilator, continued its course successfully on into the bladder, again introduced the stilette, burst the other strictures, and on the withdrawal of the dilator introduced a No. 8 catheter into the bladder. In this case there was but little hæmorrhage, and but very trifling constitutional disturbance. This case made a profound impression on me at the time, as a good example of forcible dilatation *versus* external incision; and the manœuvre by

which the resistance of the anterior stricture was overcome, and the bladder at last reached, is one that merits attention, consideration, and recollection in similar cases at the hands of the operating surgeon."

To Mr. Smyly is the profession indebted for the first publication of the means of ascertaining with perfect precision when the dilator had entered the bladder. I, like that surgeon, had frequently thought of how this could be accomplished; but until lately had not devised a means so simple as not to complicate the facile performance of the operation. The published report of that gentleman, containing a drawing of his improvement is already before the profession; and although I think it will be admitted that the instrument, as now altered by myself, embraces all the requirements in the most simple manner, yet I cannot but acknowledge the advantage that has arisen from Mr. Smyly's publication of his ingenious plan, which affords another instance of the readiness of our Irish brethren to advance the science and art of surgery.

The following cases, details of which are in the present work, give the dates and results of the operation by the Immediate Plan. These are mostly among my private patients, as those

which were operated upon in the hospital, being dispersed over various parts of the country, could not be followed out:—

Case 3.—H. R., operation, 1858; last seen, September, 1867. Passes his own No. 12 easily.

Case 5.—J. R., stricture thirty years' duration, operation, 1857; last seen, 1864; he could then pass No. 11. Had receded one size.

Case 6.—J. H., operation, 1860; last seen, November, 1867. Remains well. Can pass No. 12 easily.

Case 7.—W. B., operation, 1858; last seen, January, 1868. No. 12 easily passed.

Case 11.—Operation, 1862. After the first year no instrument was passed, and in 1866 I required to re-dilate the stricture; the operation was without pain, and when last seen No. 12 could be easily passed.

Case 13.—Operation, 1862. A most difficult case—all other treatment failed—now has No. 10 five or six times a year. Has, since the operation, enjoyed uninterrupted good health.

Case 15.—Operation, 1862. This nobleman, so far as the stricture was concerned, remained well to his death last year, only requiring No. 12 every six months.

Case 16.—Operation, 1862. This gentleman has just returned from India, and remains quite well.

Case 17.—Operation, 1862. Very difficult case. Last seen, September, 1867. Remains perfectly well, only requires the bougie once in two months.

Case 18.—Operation, 1862 ; seen last year. No, 9 enters easily.

Case 21.—Operation, 1862. Interesting case from frequency of retention. Remains perfectly well. Is married and has children.

Case 23.—Operation, 1862. A very difficult case—frequent rigors. Last seen, September, 1867, when 10 bougie was passed.

I have referred to the above cases because they are recorded in the present volume. If it were necessary I could multiply these results very largely, as, where the after treatment has been properly carried out, the same sized bougie as was employed at the time of the operation can always be passed.

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